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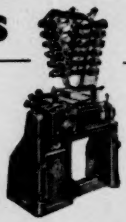
DOUGLAS  **& MACADIE**

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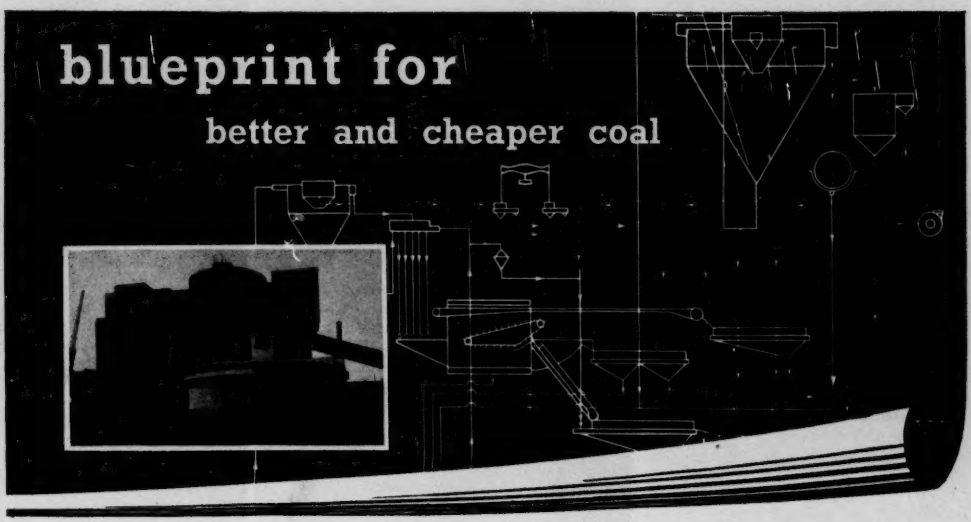

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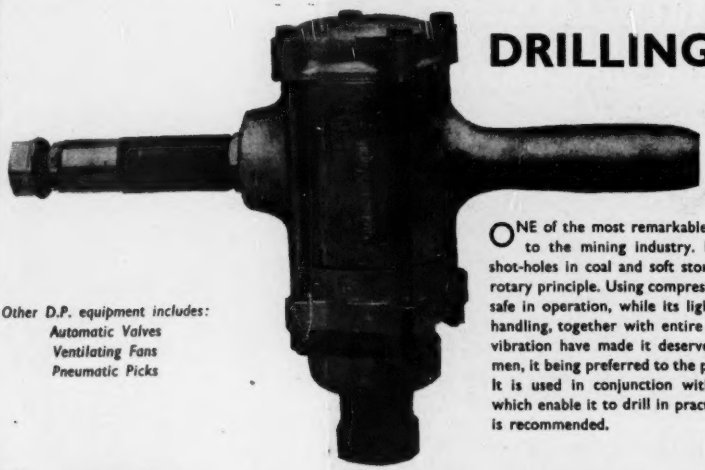

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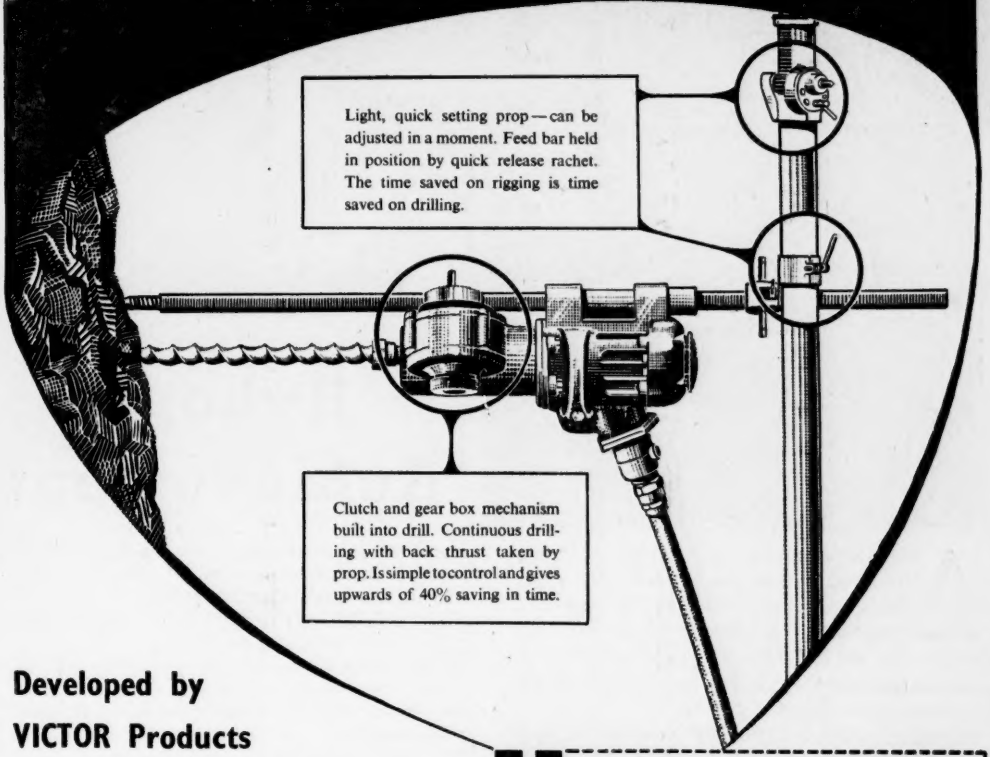
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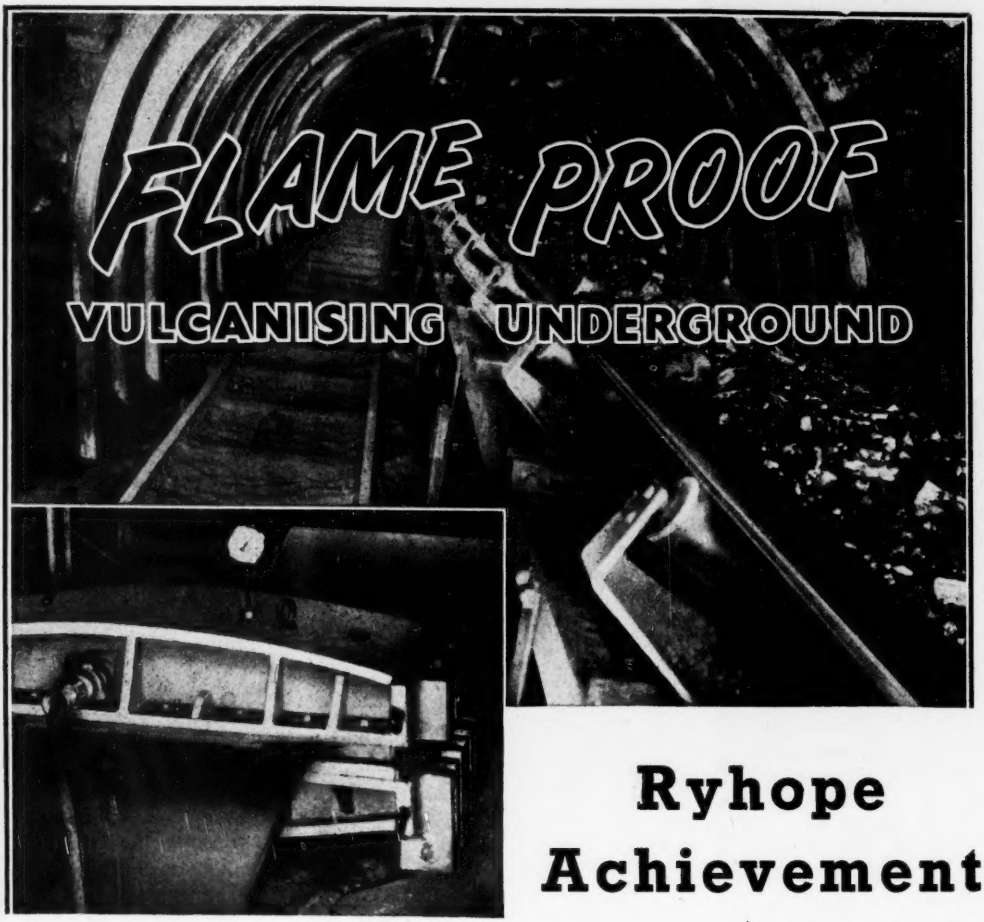

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NOTES AND COMMENTS

Steel—A Bleak Outlook

After de-nationalization re-nationalization! Such is the outlook for the steel industry as outlined by the ex-Minister of Supply, Mr. G. R. Strauss. It is a dismal prospect if a vital national industry is to be cast into the political arena with every change of Government. Surely the paramount aim should be to arrive at some form of government of the industry which will ensure the highest efficiency and maximum production with the minimum of interference with technical operation.

In this direction Mr. Duncan Sandys proposes to move cautiously. At present he has no cut and dried plan. He proposes to consult the Iron & Steel Corporation, the British Iron & Steel Federation, the Trades Union Congress, and the representatives of the steel consuming interests in the hope of securing a smooth transition from public to private ownership. That is the right method of approach.

Mr. Lincoln Evans, the general secretary of the Iron & Steel Trades Federation, is on record as having stated that "if the community can exercise control over the industry without accepting the risks and liabilities of ownership, it is a matter which should have the serious concern of everybody." Obviously the workers should be consulted. If they can be satisfied, Mr. Sandys will have gone far towards disarming the sullen hostility of the Opposition. Whether he will be successful remains to be seen. But he is not making the mistake of undue haste. His best chance of success is to avoid political provocation and address himself primarily to the task of creating conditions which will make possible a reversal of the recent shrinkage of output. The provision of an ample supply of steel is of more vital national import than any question of the ownership of the plants.

The Role of Metals in the Cold War

Dr. Zay Jeffries, Director General of the World Metallurgical Congress held in the middle of last month in Detroit, U.S.A. trod ground more familiar to the politician than the metallurigst in his opening speech to the Congress. After welcoming the delegates from many lands, Mr. Jeffries condemned Soviet Russia for creating the present world crisis and with well chosen phrases the picture of what would happen to the free world should it be overpowered by the Russian menace was brought home to the delegates. Two objectives, he said, were crystal clear: (1) to resist absorption by the Russians through fifth column, home politics or other non-military action, and (2) to resist absorption by force. To resist absorption it was therefore absolutely essential that preparations be made along military lines. In past wars, he pointed out, one of the determining factors in military strength has been metals and metal producers and *a fortiori* there could be no doubt that metals would play a dominating role in any great war of the future. To achieve a maximum contribution every effort would have to be made, not only to effectively utilize the metals available but also to secure additional quantities.

While some may deduce from the opening tone of this note that we feel that Dr. Jeffries' remarks are more appropriate shouted from the hustings rather than from the rostrum of the World Metallurgical Congress that is far from being the case. Rather was it sounded to lay emphasis on the fundamental fact that any discussion of metals to-day must be put into a global context having for its focusing point the rôle which metals can play in the present world crisis. However regrettable it may be that the Director General felt compelled to speak the way he did to a conference the keynote of which was the conservation of and substitution for metals in short supply, his emphasis on the East-West struggle can hardly be deemed to be misplaced.

With the foregoing remarks in mind he told the assembled delegates that the optimum use of the available supply of metals demanded the close co-operation of design engineers and metallurgists and he expressed the hope that the Congress would provide an opportunity for metallurgists from various parts of the world to pool their talents and experiences, cross fertilize their ideas and bring forth many valuable suggestions for enhancing the strength of the free nations.

While he stressed the point that the objective of the free world was peace he said that to develop the maximum international military potential the production of metals and their distribution required a special kind of co-operative management and if this goal could be harmoniously reached by co-operation among the free nations, peace with freedom on this earth could be achieved.

Conference on Tanganyika's Basic Industries

Further details have just become available with regard to the conference on the prospects of Tanganyika's coal deposits, which was concluded at Dar Es Salaam on October 30, and to which brief reference was made in *The Mining Journal*, November 2. Called by the Governor of the Colony, Sir Edward Twining, the conference was attended by the Regional Controller for East Africa and by representatives of the Colonial Development Corporation, railway officials and a Tanganyika Government metallurgist, who had recently returned from Sweden, where successful smelting tests had been carried out on Tanganyika iron-ore.

Because the iron-ore cannot be smelted by ordinary processes, a sample was sent to Sweden for tests by the Krupp-Ren direct reduction method and the metallurgist, Mr. H. G. Burks, reported that smelting was satisfactory and that the economics of the operation were now being worked out. The usefulness of the iron-ore which was found to the north of the coal deposits, is expected to have an important bearing on the exploitation of the coalfields. The Colonial Development Corporation recently reported that two years' investigation, at a cost of just under £250,000 showed that there were over 40,000,000 tons of good coal in one area alone. (See *The Mining Journal*, October 26.)

A decision on a railway for the coalfields was postponed for at least six months because the Government of Tanganyika wishes to obtain first a report on an economic survey of the area through which this railway must pass. This report is now being prepared by Sir Alexander Gibb and Co., but is not expected to be ready until the first half of 1952. Although the development of the coalfields was the main point on the agenda of this conference, other projects of the Colonial Development Corporation, designed to broaden the economic structure of the Colony, were also discussed.

Mining in Fiji in 1950

In our issue of January 12 last, the report of the Government Inspector of Mines, Mr. J. F. A. Taylor, in Fiji for 1949 was reviewed and we have just received the subsequent report for 1950. The industry of the islands about maintained its position during 1950 though there was some activity shown in prospecting for manganese ore, and some search for zinc, copper and lead. Output of gold and silver approximated very closely to the 1949 figures. From 178,298 tons milled 103,423 f.oz. of gold and 37,740 f.oz. of silver were recovered. These figures compare with 104,336 f.oz. of gold and 29,755 f.oz. of silver in 1949. The chief producer was again the Emperor Gold Mining Co. with 56,571 f.oz. gold and 20,631 f.oz. silver. Second place was taken last year by the Dolphin mines (23,843 oz. of gold and 7,828 oz. of silver). Loloma fell to third place with 22,980 oz. of gold and 9,277 oz. of silver. The grade of gold treated is high partly, no doubt, due to the level of working costs. Ore reserves of the Emporer were 40,000 tons lower at 985,000 tons averag-7.9 dwt. per ton. Loloma reserves were 48,000 tons averaging 20 dwt. per ton, while the Dolphin mines had a 25,000 tons reserve averaging 28 dwt. per ton. Despite there only being three mines working in Viti Levu the output was again greater than in any other Australasian area with the exception of Western Australia.

Some dozen concerns were engaged on prospecting for manganese ore with results confirming earlier opinions that the deposits are as a rule small, and only 240 tons were shipped. At the present time the geographical situation of the islands preclude any considerable development in the near future. Transport from the mines to the sea and still more the absence of any regular shipping facilities offer serious obstacles to any substantial development.

It is somewhat disappointing to learn that up to the end of the year no geologist had been found to accept the appointments offered under the Colonial Development and Welfare Fund though most of the equipment for the survey arrived from England and had to be stored.

Developing Iron Mines in Goa

As a result of the agreement for the mechanization and development of iron ore mines in the Portuguese territory of Goa (to which reference has already been made in *The Mining Journal*, September 21 and October 26), concluded by a Goa mining company with a Japanese mining company, the latest mining machinery will be installed at a cost of about Rs. 8,000,000. Work will begin this month and is to be completed in October, 1952. After mechanization, the present output of about 200,000 tons a year will be increased to 1,000,000 tons, according to a representative of the mining company, who added, however, that due to lack of port facilities at Goa, mining might have to be restricted to 500,000 tons for some time.

This scheme, which will transform the Goa iron-ore mines into the most modern mechanized mines in the whole of Asia, is sponsored by the Allied Occupation Authorities and the Japanese Government under the South-East Asia Natural Resources Development Scheme. The Export Bank of Japan will finance the purchase of machinery with repayment to be made by way of a *pro rata* export of 1,500,000 tons of iron to Japan after mechanization. The Kokan Mining Co. of Japan is to send 42 technicians to the Goan mines, and the first batch of 12 engineers is expected to arrive in Goa at the end of November. Equipment will also be arriving in the same month. An article on "Goa's Mineral Resources" appeared in *The Mining Journal*, June 15, 1951.

Portuguese Wolfram Supply

(From Our Own Correspondent)

Oporto, October 6

The position here, speaking generally, is confused and very unsatisfactory. The expectation of a uniform price for wolfram has not materialized nor has the position with regard to export licences improved. The present penal export taxes cripple both production and initiative and consequently react on exports. Rumours continue that a reduction in the amount of these taxes may be expected shortly, but mining circles do not show any undue enthusiasm over the rumour. They consider that the attention given by the Washington conference to fixing the quotas allocated to consuming countries could with advantage have been extended to obtaining from producing countries satisfactory guarantees not to introduce any measure likely to hinder production or hamper exports.

Export figures for Portuguese minerals in September and for the first nine months of the year, are shown in the following table (in tonnes):

Material	*September exports*	*Nine months' exports*
Wolfram conc.	382	... 2,748
Tin conc.	75	... 468
White Arsenic	290	... 462½
Cu. Pyrites	48,588	... 412,303
Manganese Oxide	1,069	... 7,884

The destination of the wolfram shipped this year was as follows (in tonnes): U.K., 1,709; U.S.A., 950; Sweden, 41; Germany, 20; Belgium, 12; Italy 11.

Of the tin concentrates shipped, 305 tonnes went to the U.K., 134 to Spain, and 29 to the U.S.A.

South Africa

(From Our Own Correspondent)

Johannesburg, November 5

The first gold bar produced in the Orange Free State was poured on October 25 by Mr. P. M. Anderson, chairman, St. Helena Gold Mines, from which mine the gold was taken.

It was appropriate that St. Helena should be the first to reach production stage as it was the first O.F.S. mine to start mining work proper after a long drilling initial programme. It has, however, only just crossed the finishing line ahead of Welkom Gold whose mill is to be officially started up on November 24 by Sir Ernest Oppenheimer.

The first exploratory work at St. Helena was carried out in 1937 when geophysical and magnetometric surveys were undertaken to establish the position of the sub-outcrop of the basal reef horizon. Two years later the drilling programme had largely been completed and early in 1942 the company was granted a mining lease by the Government of 8,244 claims. The war delayed sinking and development on the basal reef did not begin until 1948. Many difficulties had to be faced and overcome. The nearest railway siding was seven miles away. No electric power was available and water supplies were restricted to wells and boreholes. Gradually these and other handicaps were overcome and the experience gained by St. Helena and the Union Corporation in dealing with them has proved of valuable assistance to the mines, which have been floated since that time.

The initial capacity of the St. Helena reduction plant is 50,000 tons a month, although that figure may not be reached for some little time. The chief difference in the company's reduction plant from that familiar on the Central Rand is the installation of rod mills as the primary grinding units in the mill. The explanation for this deviation from the usual type is that ore from the O.F.S. comes from a narrow reef with thin carbon bands resulting in a shortage of suitable tube mill pebbles. Another feature is the installation in the crusher section of an alarm and interlocking trip system so that when a trip occurs an indicator board lights up showing where the fault lies, which brings all the feed systems to the affected section to a stop.

SHAFT INTERSECTIONS ON BASAL REEF

Other highlights from the Orange Free State have been the intersection of the basal reef in shafts at President Steyn and Freddies South. The President Steyn section averaged 235 in.-dwt. at a depth of 4,120 ft., which compares with the nearest borehole results to the shaft of 219 and 190 in.-dwt. The Freddies South intersection was affected by a dyke, but excluding it, the average value was 210 in.-dwt., the nearest boreholes to the shaft yielding 43 and 255 in.-dwt. A number of other shafts are expected to cut the reef before the end of the year including Western Holdings and Virginia.

The first results of developments at Virginia have just been announced and are rather interesting. Of 465 ft. sampled, 110 ft., equal to 23.7 per cent proved payable averaging 6.48 dwt. over 33 in., equivalent to 214 in.-dwt. This result is regarded as encouraging as the shaft was sunk in an area where previous boreholes had failed to yield payable values and the original shaft intersected was only 89 in.-dwt. It would seem, therefore, that as development advances towards the centre of the property, where Nos. 1 and 2 shafts are doing down, values are likely to improve.

In fact, since our correspondent's letter was received, Western Holdings have announced that 16 payable sections of the basal reef intersected in the No. 2 shaft at a depth of 4,271 ft. below the collar of the shaft averaged 109.65 dwt. over a width of 8 in., equivalent to 877 in.-dwt. The intersection was on a zone of minor faulting and the exposure was completed at a depth of 4,291 ft. Due to faulting, however, approximately 15 ft. of the perimeter was off reef.

JOINT PRODUCTION PLANT FOR VIRGINIA AND MERRIESPRUIT

A further interesting development in this area is that Anglo-Transvaal's two mines, Virginia and Merriespruit, are to have a joint reduction plant. This is being constructed on the basis of 25,000 units, and work on the first of them has started. When two units are available they will be so arranged that the full benefit can be derived from joint supervision and housing. It will also be possible to use both units for the treatment of ore from either mine during the initial stages of production.

Judging by all the reports from the Free State, there seems to be no abatement of the problem of underground water, which is cutting down shaft-sinking rates and handicapping underground development. So far as the latter is concerned, up to the present it has not been particularly serious since the developing mines are relatively shallow, but it is likely to become so when a start is made on opening up the reef in deep proportions. In this connection it will be remembered that rock temperatures in the O.F.S. are much higher than those on the Central Rand, but it had been hoped that dry mining conditions would prevail to offset this. Moreover, it now seems clear that the reverse is the case.

In view of this feature ventilation is going to become of ever increasing importance and that far larger quantities of dry cool air will be required than was originally anticipated. It is probable therefore that a very considerable amount of "twinning" of haulages and airways will have to be undertaken in order to overcome this, since the broken nature of the ground in many mines will render block mining essential.

JOINT PRODUCTION PLANT FOR VIRGINIA AND

Against this background of water trouble and broken ground which has so far been disclosed in the Free State, there is one new mine developing the Basal reef which, so far, has not had to face these problems. This is Stilfontein G.M., now opening up the ground adjacent to Vaal Reefs and Western Reefs. Since the beginning of the year when development started, 5,800 ft. has been done off reef, of which virtually 100 ft. has proved payable. Total development amounts to nearly 16,000 ft. as at the end of September last and according to the information available only a few minor faults have been encountered. Furthermore, apart from one or two intrusive dykes, no water-bearing ground has so far been met with. Apart from these natural advantages, Stilfontein's property has been fortunate in that, unlike the Free State, road and rail transport, power lines and water supplies, all run through the property.

Although prophesy is always a risky business it would not be in the least surprising if this mine were to reach the production stage well ahead of the scheduled date set down for June of next year.

A further interesting possibility arises out of the good development in the Charles shaft area, is that it may not be necessary to sink the Margaret shaft to its ultimate depth at the present stage, but only to a point to connect with the main haulage. This could mean an appreciable saving in pre-production capital expenditure, as when its completion did become necessary, it would be possible to finance this out of profits instead of increasing the capital structure of the company.

Exploration and Development of Canadian Uranium Deposits

By B. S. W. BUFFAM, Consulting Geologist, Toronto, and E. B. GILLANDERS, Manager, Western Operations, Eldorado Mining & Refining (1944), Ltd.

The development of uranium deposits is a relatively recent phase of mining in Canada. To date, the only producer of uranium ores on a commercial scale has been the Port Radium mine on Great Bear Lake, N.W.T. However, within the past few years, intensive prospecting has been carried on throughout Canada and many occurrences of uranium-bearing minerals have been discovered, state the authors of the following paper, which appeared in "Transactions of the Canadian Institute of Mining and Metallurgy," Vol. LIV, 1951, pp. 434-437.

Eldorado Mining & Refining (1944), Ltd., has been active in the search for, and the exploration of, uranium deposits in Canada for a longer period than any other company and has, therefore, accumulated much information, especially about occurrences in Saskatchewan and in the Northwest Territories along the western fringe of the Precambrian Shield. The company has also had experience in the underground operation, and in the mining, of uranium ores at Port Radium.

The first objective in the search for uranium deposits is to find areas containing radioactive minerals. To date, this has been done principally by prospectors. The Great Bear Lake area was found by following up reports of earlier explorers, and the Athabaska area was discovered during an intensive search for gold. The Lake Superior area was prospected because of a reference in century-old publications to the presence of pitchblende about eighty miles northwest of Sault Ste. Marie.

Prospecting for uranium has been greatly facilitated by the development of portable Geiger-Mueller equipment and of scintillation counters. Apart from these aids, the prospecting for uranium is done in a similar manner to that for other valuable minerals.

DETAILED GEIGER SURVEYS

When a discovery of uranium-bearing minerals is made and protected by staking of claims, it has been the practice of Eldorado to do a thorough and systematic Geiger survey, usually controlled from a grid of evenly spaced lines (normally 200 ft. apart). During this ground Geiger survey, all radioactive occurrences are picketed on the ground and recorded on a map. The pickets show the date, the strength of radiation as given by the Geiger held at a constant distance from the ground, and any other pertinent data. Light, rather insensitive Geigers are used for this work, because of their ease of operation and because it has been found that they are sufficiently sensitive to pick up all the significantly mineralized occurrences as well as many which are relatively unimportant.

It has not been the practice of Eldorado to do extensive stripping and trenching. The Geiger crews are supplied with grub-hoes for the immediate investigation of thinly-buried radioactive fractures. In addition, some pick-and-shovel work has occasionally been done to clarify the structure of an occurrence, especially strike and dip. Rock trenching to provide fresh surfaces for sampling has only rarely been done as it is thought that oxidation and migration of uranium salts makes it difficult to obtain an accurate surface sample.

The Geiger survey is followed by detailed geological mapping. The anomalies which had been located and clearly marked by pickets are correlated. The fracture pattern, as well as the rock distribution, is strongly emphasized on the maps, and a special effort is made to relate small radioactive fractures to the larger structural features.

As with most minerals, uranium deposits exhibit structural control, and experience indicates that they are generally related to shear zones occurring both along these zones and in the tension fractures that accompany them.

DIAMOND DRILLING

During the preliminary stages of the development of a uranium occurrence, Eldorado has placed most dependence on diamond drilling. As soon as surface work indicates the possibility that uranium mineralization may be present in an area in significant amount, a programme of surface diamond drilling is undertaken. Usually such a programme has followed two distinct stages, the first being general routine exploration, and the second detailed drilling of the most favourable intersections obtained in the first stage. Routine exploratory drilling is commonly done at intervals of 400 to 500 ft. and an area is completely drilled off before the detailed drilling is started. The Ace mine was discovered while such a programme was being carried out along the St. Louis fault zone. This fault on surface is marked by a pronounced depression in which is exposed a small knoll of rock carrying a few threads of pitchblende.

When a surface diamond drill programme is laid out, the holes, if possible, are so spaced at definite intervals that they will coincide with future mine sections. They are also collared so that the vein will be intersected roughly at the same horizon or series of horizons corresponding, if possible, to future mine levels. In all preliminary drilling from surface or underground, it is standard practice with Eldorado to employ drilling equipment of sufficient size to produce "*A*" core ($1\frac{1}{8}$-in. dia.). This size usually gives good core recovery and a large sample. Later, if recovery is satisfactory, the core size is reduced to "*E*" (27/32-in. dia.).

All holes are tested with a Geiger probe unless they are obstructed by cave. If core is lost in a vein section, the Geiger reading gives a rough idea of the activity emanating from the surrounding rock. A high reading usually indicates visible pitchblende exposed in the wall of the hole, but quantitative estimates cannot be made from the experience gained to date.

When the core arrives in the core-house, each box is passed under a shielded Geiger. If any activity is detected, the core is then tested row by row and the limits of the activity are closely determined. The core is sampled on the basis both of geology and radioactivity, but no sample less than one foot in length is taken. Sufficient experience has not as yet been accumulated at Beaverlodge upon which to base a procedure for cutting or reducing high assay values. At the Ace mine, where wide widths of varying grade have been traversed by drill holes and later exposed by cross-cuts along the same holes, the average grades as determined from the cores and from the muck and channel samples correspond closely. In smaller, higher grade vein occurrences, where the pitchblende is erratically distributed, it may be necessary to reduce the high values before striking an average grade.

The surface exploration of a deposit is stopped as soon as it is evident: (1) that the deposit is too small or low grade to warrant underground work; (2) that additional drilling data will not clarify the prevailing theories about the possibilities of the occurrence and that underground work will be required if their solution is to be known; (3) that a mine has been indicated and that underground work is warranted.

UNDERGROUND DEVELOPMENT

The decision to go underground is, therefore, subject to the same problems as are encountered with other minerals. There may be instances where values are uniform and so regular that ore reserves can be calculated, but Eldorado has not had one of these as yet. There may be instances of erratic values where ore grade material cannot be established without underground work, and the Ace mine might be considered in this class. Then, as at the Eagle mine, the vein intersections may be both erratic and discontinuous. The decision here regarding further development work was influenced by the need for underground data regarding this type of occurrence, which was similar to numerous other deposits in the Beaverlodge area.

The type of shaft is, of course, related to the size and disposition of the ore bodies that are to be developed. At Martin Lake, it was possible to explore the veins underground through an adit. At the Ace, a three-compartment inclined shaft was sunk because the St. Louis fault dips (50°) south-west. At the Eagle, a vertical three-compartment shaft was sunk approximately midway between the Lost zone and the Spur zone vein-fracture systems. In order to obtain the required information as quickly as possible, two levels were established at the Ace and Eagle, 150 and 275 ft. vertically below surface.

The preliminary underground development at the Ace is by line drives parallel to and about 50 ft. beneath the St. Louis fault. Crosscuts are driven across the ore bodies at intervals of 100 ft., and they serve both to expose the ore for sampling and to provide openings from which inclined diamond drilling is done between levels.

At the Eagle, cross-cutting on line is done to the Spur and Lost vein-zones. Drifts parallel to the general strikes of the zone are then driven on line. After the veining has been located and outlined by diamond drilling, it is exposed by drifts which follow the vein fractures.

After sufficient knowledge is obtained regarding the mode of occurrence of a deposit, the location of lateral openings will be controlled partially by mining requirements.

At both the Ace and Eagle, systematic programmes of underground, horizontal, diamond drilling are completed. Holes spaced at 100 ft. intervals are drilled at right angles to the line drives. Whenever a vein or mineralized area is intersected, detailed drilling is done midway between the original holes and, if necessary, additional holes at 25-ft. intervals are also drilled.

Cross-cutting usually at 10 ft. intervals through the ore bodies follows the drilling, and the cross-cuts are always located along drill holes, so that the data from the drilling can be closely checked. Upon completion of a cross-cut, inclined drilling is done from it to investigate the vertical continuity of the ore. These inclined holes are also drilled parallel and usually at 25 ft. intervals. If necessary, the cross-cuts are extended into the walls of the mineralized zone to provide sufficient openings to permit the holes to be drilled parallel to each other.

SAMPLING AND METALLURGICAL TESTS

The primary purpose of the initial underground work is to determine the grade, as well as the size, of the deposit. With this objective constantly in mind, all possible types of samples (car, chip both face and back, and large bulk) are taken. Sampling is made the direct responsibility of the mine captain and the shifters, and close supervision of it is also maintained by the geological and engineering staffs.

During the past few years, rapid and accurate methods of assaying have been developed and perfected. (Information on these methods can be obtained from the Mines Branch in Ottawa.) General assaying is done by ratemeter and check assays are made by fluorimeter and by chemical methods. Results of these three types of assaying have usually corresponded closely at Beaverlodge.

Preliminary metallurgical testing is done by using diamond-drill core rejects. As soon as the underground openings have exposed the ore zones, large bulk samples, varying in weight up to 50 tons, are taken. To date, the investigation of the ores from the Beaverlodge district has been mainly done in the laboratories of the Mines Branch, Ottawa, supplemented by experimental work in Eldorado's research laboratory at Port Hope and by Dr. F. A. Forward at the University of British Columbia.

PRODUCTION

Stoping practice varies with the type of ore body. At Port Radium, two methods are employed: flat back cut-and-fill, and residue. At the Ace mine, because it is expected that the St. Louis fault zone will produce a weak hanging-wall, the ore will probably be mined as a cut-and-fill operation. At Martin Lake, the veins are short and narrow and an open stoping method will be used, the ore shoot being mined as a shrinkage rill without any preparatory timbering and the ore loaded from the track by mucking machines.

The rocks at both Port Radium and Beaverlodge are harder than average and carbide-tipped drill rods with light-weight equipment are being used. Footage drilled per rod is in excess of 500 ft. and an advance of 7.5 ft. per round is generally attained, with monthly advances up to 225 ft. per single shift, Sundays excluded.

The Mines Branch at Ottawa has carried out a large number of mill tests on all the uranium ores which have been discovered thus far in Canada. Most of these ores have been found to be amenable to treatment by standard methods; that is, by mechanical concentration or leaching, or by a combination of both. The data now available on the various treatment processes are contained in a paper prepared by Arvid Thunaes, Chief of the Radioactivity Division of the Mines Branch. (Copies of this paper may be obtained from the Mines Branch.)

OPERATING COSTS

The underground stoping costs at uranium deposits will be comparable to those for other mineral deposits in the same areas. However, underground development costs may be high because many of the veins now known are short and narrow, and percentage of development in ore is liable to be small. On the other hand, the value of the ore developed mounts rapidly. For instance, 400 ft. of ore 4 ft. wide and 0.25 per cent U_3O_8 grade has a value, at present prices, of about $5,000 per vertical ft., of $625,000 per 125 ft. level.

Many questions have been asked of Eldorado by prospectors, mining engineers, and financiers with regard to the mode of occurrence of uranium and about the problems inherent in the development of these interesting deposits. Nine of the questions most frequently asked are answered below.

(1) *What are the Most Favourable Uranium-Bearing Districts in Canada?*—Uranium occurs in the earth's crust

somewhat after the fashion of most other valuable minerals; disseminated in minute quantities, and as concentrations in widely separated areas (metallogenic provinces). In Canada, four important concentrations have been located and others can be expected because of the vast areas that remain to be explored. These areas, in the order of their potential importance, are (*a*) Beaverlodge and Black Lake district; (*b*) Great Bear Lake-Hottah Lake district; (*c*) Theano Point district, Lake Superior; and (*d*) the pegmatitic deposits that extend from Georgian bay to the Saguenay river.

(2) *Are Some Radioactive Patterns More Favourable Than Others?*—It is doubtful if a useful generalization can be made regarding the direction of a fracture pattern most favourable for uranium deposition. At Port Radium, the majority of the uranium-bearing veins strike north-easterly. The Nos. 1, 2, and 5 ore bodies are in areas of late tensional fracturing, along pre-existing shear zones and usually adjacent to large bodies of porphyry. The No. 3 vein, one of the most prolific in the mine, is contained in an east-west tensional fracture zone lying between the No. 2 and No. 5 shear zones.

In the Goldfields district, the Ace mine is located in a strongly shattered zone in the footwall rocks of the St. Louis fault, which strikes north-east and forms one of the major structural features in the district. The Nicholson and Fishhook bay deposits, which strike slightly west of north, are in Tazin sediments as is the Ace deposit. West of the Ace mine, however, radioactive minerals are found in Athabaska sediments which rest unconformably on the Tazin series. The Martin Lake ore is also in Athabaska series rocks.

(3) *What Geological Conditions Appear to be Most Favourable for Commercial Deposits?*—Geological conditions can be considered to mean (*a*) rocks, or (*b*) fractures. Rock types favourable for the deposition of uranium vary greatly. In the Lake Superior district, the deposits occur in and adjacent to diabase dykes which have been intruded into large batholiths of granite. At Eldorado's Martin Lake deposit in northern Saskatchewan, the favourable rocks are basaltic flows which are intercalated with conglomerate and arkose. A fracture which cuts across all of these rock types carries pitchblende only in the basalt. In the Port Radium and Ace mines, the uranium mineralization occurs in finely bedded, quartzite argillite, but pure quartzite and granite are definitely unfavourable. The Ace Lake ore bodies in northern Saskatchewan are in a series of highly altered siliceous sediments which have been intricately shattered.

Pitchblende mineralization occurs frequently as the matrix in irregular tension breccia zones associated with coarsely crystalline, white carbonate. In the Bear Lake deposits, pitchblende is mined both from strongly sheared zones and from the complementary tension fractures that accompany these zones of differential movement. In their association with fractures the deposits are similar in many respects to base metal deposits, such as those of lead and zinc.

(4) *What are the Depth Possibilities for Uranium Deposits?*—At Port Radium, pitchblende is being mined at a depth of 1,300 ft. below surface and it is expected it will be found at much greater depth. In the Beaverlodge district, diamond drilling has intersected pitchblende at a depth of about 900 ft. below surface. It is the present belief that uranium mineralization will extend to a considerable depth wherever the fractures are sufficiently strong to provide the openings for its deposition.

(5) *What General Characteristics should a Radioactive Anomaly Possess Before it Warrants Surface Exploration, Diamond Drilling and/or Underground Development?*—The most important characteristic of a radioactive anomaly is probably its extent. Often small cracks contain high-grade specimens, but unless the "cracks" are definitely related to a major structure, they are seldom worth much development work. Generally, the same rules apply to uranium deposits as apply to deposits of gold and the base metals. In most instances, there are many uncertainties and experience is usually the principal guide. For instance, at the Eagle deposit, Beaverlodge area, many high-grade intersections were obtained in diamond drilling, but none of them "lined up" very well. It was thought that they represented a large number of small veins and it was decided to test the occurrence by underground work. Results to date have shown that the favourable rock types have a very irregular distribution and only a small tonnage of ore of commercial grade has been developed.

(6) *What is the Relative Importance of Geigering, Trenching or Diamond Drilling in the Preliminary Stage of Exploration of Uranium Deposits?*—It is the opinion of the management of Eldorado that, after a systematic and thorough Geiger survey has been made, very little trenching need be done prior to surface diamond drilling. There are of course, instances where considerable stripping has to be done to enable the geology and structural relations to be studied, but rock trenching for sampling purposes is not done.

(7) *What Use has Eldorado Made of Geiger Probes—for Drill Holes—Through Ice and Water—In Underground Openings?*—All diamond drill holes are tested with a Geiger instrument made in the form of a tube that will readily slip down the hole. It is lowered into the hole on an insulated cable which contains the wires that transmit the impulses to a recording instrument on the surface. It has been found that all connections have to be absolutely moisture-proof. In order not to stretch the cable, if the tube becomes wedged in the hole, the connection between the tube and the cable is made weaker than the cable, so that it breaks before the cable is damaged. In flat holes, the tube and cable are pushed into a hole using slotted magnesium tubing, which can be disconnected in five-foot lengths. In short holes, a steel electrician's tape is used.

Diamond-drill hole Geiger readings can only be correlated with values in a general way. Frequently, intersections of high-grade core give low Geiger readings and sometimes in the vicinity of low-grade core intersections very high Geiger readings are obtained indicating, probably, pitchblende in the walls of the hole. However, Eldorado has found the readings obtained from the diamond-drill hole Geiger very useful in tracing veins in which pitchblende is erratically distributed.

Eldorado has done very little experimenting with probes through ice or water to test for radioactivity at lake bottoms. Any exploration that has been done under water has been by diamond drilling.

EXPERIMENTAL WORK ON GEIGER INSTRUMENT DESIGN

Considerable experimental work has been done on the design of a Geiger instrument which, by means of a directional tube, will give the radioactivity over a restricted area on a rock face underground. To date, a completely satisfactory instrument has not been produced and it is still customary for the underground supervisory staffs to carry a small pocket sized Geiger for use in the location of finely divided pitchblende in the walls of underground openings.

(8) *Can Good Core Recovery be Expected from Diamond Drilling of Uranium Deposits?*—The problem of core recovery is mentioned by most exploration engineers and others interested in the development of uranium mines. To

date, Eldorado has not considered it a very serious problem. After the use of the diamond-drill hole Geiger became standard practice, lost core at vein intersections could be compensated for by the readings obtained with this instrument. At Port Radium, drilling through the strongly sheared vein structures is difficult and large volumes of water under heavy pressure are usually intersected. Core recoveries in some of the veins are poor, but it is doubtful if any ore body has been missed because of this problem. At the Ace and Eagle mines in the Beaverlodge district, core recovery is excellent and seldom drops below 95 per cent. Massive seams of pitchblende, an inch or more in thickness, core equally as well as the wall-rocks. At the Fishhook bay deposit on Athabaska lake, the veins traverse highly porous, sandy sediments similar to the wall-rocks at the nearby Nicholson mine. Core recoveries at both these deposits are very poor, but the problem here is one mainly of incompetent wall-rocks.

It might be mentioned and stressed that all exploratory drilling is done by Eldorado with equipment that produces *"A"* (1⅛ in.) core, rather than the standard *"E"* (27/32 in.) core.

(9) *What Mining Methods are in Use by Eldorado?*—Uranium deposits do not differ in their mode of occurrence from those of other base metals and standard mining methods are applicable to them.

Diseases in the Mining and Allied Industries—Some Recent Work

A number of papers have appeared recently on various industrial diseases, particularly those caused by dusts. A survey of the position with regard to silicosis and pneumoconiosis has been made by N. A. Vigdorchik.[1] According to existing data, pneumoconiosis cannot arise from quartz-free dust, and fibrotic changes cannot occur unless quartz particles are present. Some silicate dusts, such as asbestos, may cause pneumoconiosis as a result of their decomposition in the body with the liberation of free silica.

A clinical investigation of the effect of the inhalation of vanadium pentoxide dust has been described by Sven Gösta-Sjöberg.[2] This worker describes a four-year study of some 36 workers in a vanadium pentoxide plant. These workers showed varying effects, ranging from conjunctival irritation, nasal catarrh and minor throat and chest complaints, to cases of pneumonia and bronchopneumonia. The fact that vanadium was absorbed was demonstrated by the spectrographic analysis of the blood and urine, and patch tests indicated skin sensitivity in some cases. The onset of the attack usually occurs within a week of exposure to the dust and may last from quite a short time to a considerable period, depending upon the length of the exposure and its severity. Tests carried out on rabbits indicated that the inhalation of vanadium pentoxide could, in extreme cases, cause death. It produces acute irritation of the respiratory tract, which may take the form of tracheitis or bronchopneumonia, but it does not produce pneumoconiosis or pulmonary fibrosis.

HAZARDS IN IDRIA MERCURY MINES

Conditions in the mercury mines of Idria in Jugoslavia have been described by V. B. Vlouk and co-workers.[3] The mercury here occurs both as cinnabar and native, the average mercury content of the ore being 0.7 per cent. Where cinnabar alone is dug, there is little or no hazard because of its low solubility, but the mining of the native mercury is extremely hazardous. In the cinnabar mines, the mercury concentration varies from 0.05 to 0.50 mg. per cu. m. such mines containing a certain amount of native mercury also. As the ratio of native mercury increases to a maximum, the mercury concentration increases to 5.9 mg. per cu. m. The greatest amount of poisoning occurs during the roasting of the ores and the filling of mercury into steel bottles. Mercury concentrations in the smelting plant vary from 0.17 to 1.1 mg. per cu. m.

A clinical investigation of 97 workers in an aluminium smelting plant has been described by H. Modder and T. Schmitt.[4] Eighteen operators, who had been employed for an average period of six years, showed acute lung damage. Some showed aluminosis, one with some fibrosis, and five had tuberculosis. X-ray examination showed only slight differences between these cases and others having pneumoconiosis at an equivalent stage.

STUDYING DUST IN INDUSTRIAL ATMOSPHERES

Methods by means of which dusts may be studied in industrial atmospheres have been described by P. F. Holt.[5] In the konimeter, which is suitbale for routine analysis, a measured volume of air is drawn through a narrow orifice and impinges on a slide coated with glycerol. The particles are then counted by the use of a microscope fitted with a graticule. By this method, 50-60 per cent of the particles are collected for air containing between 500 and 2,300 particles per c.c.. but particles smaller than 8 μ are not counted by this method.

In jet sampling instruments, a measured volume of air is passed through a slot and impinges on a glass plate. Before reaching the slit, the air passes through a chamber where it is saturated with water and the dust therefore adheres to the glass plate. The efficiency is low, being of the order of 40 per cent and although small particles are collected readily, many of the larger particles escape.

USE OF THERMAL PRECIPITATOR

The highest accuracy is obtained by the use of the thermal precipitator. The apparatus consists of an electrically heated wire placed in between two microscope cover slips, and makes use of the fact that there is a dust-free space around a hot body, the extent of which depends on the temperature difference between the body and the surrounding air. The apparatus is so constructed that when a stream of air is passed between the plates, the dust is completely removed and adheres to the cover slips. It is stated that the instrument is almost 100 per cent efficient. This is true for particles up to at least 20 microns, but the counting of lower sizes depends upon the efficiency of the microscope. By using a nitrocellulose film, it is possible to examine the dust particles with the aid of the electron microscope which will, of course, considerably enhance the value of the apparatus.

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Machinery & Equipment

Atlas Diesel Drilling and Loading Equipment

Aktiebolaget Atlas Diesel of Stockholm is a firm which has been engaged in the manufacture of rock drills and other pneumatic tools for over 50 years. Production was started for the purpose of meeting the steadily growing requirements for compressed air equipment in Swedish mines, steel works and engineering industries. This resulted in a gradual expansion in the company's manufacturing capacity and its products form an important item in Sweden's export trade.

A prominent place in the company's manufacturing programme is occupied by equipment for mining and tunnelling, which is finding increasing use wherever the Swedish Tunnelling Method is being used. Of special interest are the rock drills now in use all over the world

The Atlas Rock Drill Type R.H.656.W.

from the cryolite mines of Greenland to the gold mines of South Africa. They are adapted to the new rock drilling technique which has been made possible by the Coromant steels, produced by Sandvik Steel Works. This technique is based on a close collaboration between Atlas Diesel and the Sandvik Steel Works, devoted to the development of the quality and design of these hard metal tipped steels and their proper use. The company's activities are not, however, confined to manufacturing alone and technical service also forms an important part of its programme; this service plays an essential part in Atlas Diesel's co-operation with its customers for ensuring efficient use of Atlas products, concise details of the most important of which are given in the following paragraphs.

The Atlas Diesel RH range of rock drills comprises self-rotation hand-hammer rock drills, principally in two sizes. The main valve is a carefully ground hardened disc with a small stroke; it is stated to keep its tightness independently of the amount of wear. These drills are made for powerful air blowing or water flushing through tubes and are fitted with a special device for the temporary removal of dust and chips from the bore hole. On model RH-654, the shank of the drill steel is fitted with a separate device for water flushing, which is used to advantage with extensible drill steels, while the RH-656W is specially designed for operation also at low pressures. Rock Drills RH-571L and RH-571W are claimed to be light, highly efficient rock drills, suitable for use with Coromant drill steels in quarrying, shaft sinking, surface and underground benching, pop-holing, etc. For drilling horizontal holes, a light pneumatic pusher is available for use with these drills.

As regards Coromant drill steels, mentioned above, the company states that the enormous durability of these hard metal bits fully eliminates complicated drill sharpening equipment, a simple pneumatic rotary grinder being sufficient.

The company's pneumatic pusher (already referred to) is described as an appliance which makes possible the use of light hand-hammer rock drills in tunnels, drifts, and other localities where these tools cannot be operated without auxiliary devices. It consists of a piston rod forced forward by means of compressed air, the pressure of which can be adjusted as required by means of a reducing valve. Special extension rods are available to lengthen these pushers.

The Raising Feed BMT-63A for hand drills is developed for use in narrow places where it would be difficult to employ an ordinary airleg and where drilling of upholes is involved, as in raising, stoping, and sub-level caving. The equipment is designed to enable the use of rock drills of the same type as those employed with pneumatic pushers in drifting, etc., thereby attaining the best utilization of the drilling equipment on hand and reducing maintenance cost.

This equipment has been developed with a view to proper utilization of the hard metal tipped drill steels, the length of feed being in excess of that of rock drills of earlier design. This feed is furnished with a special control which facilitates the starting of the holes and enables adjustment of the feed power so that this will correspond to the weight of the steels used and other existing conditions. An easily accessible unloading valve enables rapid release of the feed pressure if the drill steel strikes a fissure.

A characteristic feature of the Atlas Diesel loaders type, LM-30 and LM-35 is their speed in all movements and comparatively light construction. These features have been achieved partly by using air motors of the rotor type, which—contrary to motors of the reciprocating type—are fast-running, and partly by using Swedish high quality steel. In spite of the light weight of the loaders, a perfect balance is ensured also when swivelling.

Other advantages claimed for these loaders are that during digging the bucket, which is reinforced at the front edge by special welding, rests in its lower position on a buffer, resulting in the forces being transferred directly to the bogie and the stresses on the other parts of the machine being reduced. Thus, when the bucket is forced against the stone pile, the full power of the traction motor can be used. Further, the cradle, when in its lower position, rests on a cross-bar arranged in the

front part of the frame, resulting in a lever action, ensuring maximum power on the bucket during digging. The cradle does not move to any great extent during this operation, which ensures very satisfactory filling of the bucket. The lever action between the point at which the chain is attached to the cradle and the loading resistance of the bucket is so balanced that maximum bucket power is obtained during dumping. Safety against breakage of the various parts during heavy operation is further raised

The Atlas Mine Loader in Action

by the laterally turnable top part of the loader being carried on double ball bearings and the non-existence of king pin bearings, as distinct from other loader constructions. This facilitates easy dismantling of the loader into two parts, which is of importance when moving the loader from one level to another—particularly in narrow shafts—where hoisting arrangements are provisional. Loading capacity: about 140 tons in 7 hours when car shunting is done by hand.

Protecting Mining Equipment Against Corrosion

The corrosion of colliery plant and equipment, and its prevention as a practical proposition, is a subject of the greatest importance to mining engineers. Many different methods have been evolved in the past in attempts to overcome the troubles caused by corrosion and wear, preventing accidents and eliminating stoppages due to the breakdown of vital parts and components. Electro-chemical deposition of metals is undoubtedly one of the most successful methods, and thus interest attaches to the "Fescol" process of Fescol Ltd., North Road, London, N.7, the originators of deposition for industrial purposes.

Nickel and chromium are the metals generally used. This process was originated as a salvage operation, but the non-corrodible properties of the deposited metals soon became evident, and a natural development was the protection of new machinery on the same lines. In all cases a corrosion-free surface which is highly resistant to wear is obtained.

With regard to new work, a nickel skin thickness of 0.005 in. is generally sufficient, with say 0.002 in.-0.003 in. for chromium. In salvage work, depending of course on the amount of wear, the deposit can be built up to any desired thickness within reasonable limits, giving a new non-corrodible surface that is easily machined.

"Fescol"-izing is based on the efficient adhesion or interlocking of the deposited material to the basis metal, obtained electro-chemically, and the blending of the materials is such that it is impossible to dissociate them. Another advantage is that the work is carried out cold; no heating of the component or part to be treated being required so that distortion cannot take place.

The process is applicable to every type of equipment, including colliery boiler plant and auxiliary machinery, carburetted water gas plant, the rams of high-pressure water pumps and other hydraulic apparatus, and centrifugal pumps.

For example, the company makes reference to a carburetted water gas plant consisting of three automatic sets each with a capacity of 3,200,000 cu. ft. of gas per 24 hours, and a coke consumption of 50 tons. All the hydraulic rams on this plant are exposed to coke dust, and since they were treated with chromium a number of years ago have given no trouble in this respect. The charger valve suspension rods, which are subjected to heat and the abrasive action of coke have also been protected with chromium. Coal gas also has no action either on nickel or chromium, and both metals possess good resistance to tar and other products.

New Austrian Smelting Furnace

The Austrian iron and steel concern of Sulzau, Werfen, Salzburg, recently completed the installation of a new blast smelting furnace which is stated to permit an economy of 25-35 per cent in coke consumption, while increasing output by 30-40 per cent. Furthermore, the sulphur content of the cast iron produced will be reduced by about 30 per cent. The Sulzau concern is the only Austrian works to possess a charcoal-fired blast furnace.

Victor Products Percussive Drill Steels

Tungsten Tipped Percussive Drill Steels are described as the latest development by Victor Products (Wallsend), Ltd., Wallsend-on-Tyne, which firm states that 20 years' experience in the manufacturing of tungsten tipped rotary drilling bits has been applied to produce a complete range of steels for use under conditions too hard for rotary drilling. In particular, when the hardness factor of the material to be drilled exceeds 65, Victor steels are claimed to give the most satisfactory results.

These steels are available, at the moment, in $\frac{7}{8}$ in. hexagonal steel with a range of shank sizes and a single chisel head.

New Development in Safety Goggles

Industrial eye shields which give complete protection without discomfort to the bridge of the nose or the ears have been a long felt need in industry. Messrs. J. & S. Newman Ltd., of 100, Hampstead Road, London, N.W.1, have just introduced an eye shield, named Safespex, which is claimed to answer all the problems connected with this important side of safety and welfare in factories and industrial organizations where the eyes are under stress or danger.

Safespex is stated to offer completely unsplinterable and ventilated goggles, toned to individual industrial and institutional requirements, e.g., green for welding, red for X-ray work, grey/blue for sun glare and clear for general use, all giving completely unrestricted field of vision. Also, the makers state that the wearer of these safety goggles has no difficulty in placing them over spectacles.

Safespex rest only on the cheek bones and the forehead, thus avoiding any discomfort to the nose or ears; an elastic band holding these lightweight goggles easily in place. Wherever vision is in danger or under stress, Safespex should be an indispensable addition to standard equipment.

Metals, Minerals and Alloys

Copper.—News from America is scanty this week where the authorities and the market are digesting measures to equate as far as possible supplies between civilian needs and the priorities for defence which will from now on become more urgent. Attention has centred largely on the decline in the recoveries from scrap reported in October to have dropped to 1,680 s.tons as against the normal 10,000 tons. Ingot production in September was also heavily down. Naturally discussions between the N.P.A. and dealers turned to the possibilities of larger stockpile releases which scrap men pointed out would accelerate scrap recovery; 200,000/300,000 tons were suggested, but the N.P.A., after pointing out that 55,000 tons had already been withdrawn from stockpile, intimated that further withdrawals should not be expected.

U.S. sales for October delivery are reported as slightly over 103,000 s.tons but delivery was deferred by reason of the dock strike, fortunately finished last week. The Anaconda project at Yerington, Nevada, to cost $24,500,000 has been approved by the N.P.A., which will qualify it for the rapid write-off provisions of the Defence Act. Production is expected to start within two years with an annual production of 30,000 s.tons rising later to 33,000 tons: estimated life of the mine is 10½ years. The Government is providing a floor of 25½c. per lb.

The Northern Miner states that the East Sullivan mines has found an entirely new copper body by means of a vertical bore from the 1,050 ft. level; 145 ft. of core averaged 1.17 per cent Cu. The lode has been found in unexplored ground west of the main ore body.

Later reports regarding German purchase of Paipote copper from Chile suggest that the earlier statements from Santiago were somewhat previous and in particular the price has not yet been fixed.

The Italian Government has authorized the purchase of a first lot of blister copper amounting to 6,000 tons from the sterling area to be converted to copper sulphate for next year's season for which some 8,000 tonnes is estimated to be necessary.

Lead.—What with the cessation of imports owing to the United States ceiling price of 19c., the strike at the Herculaneum Smelter, and the difficulty of increasing domestic output, the present scarcity of lead in the United States is acute and demand far exceeds supply. All lead is to be placed under allocation as soon as possible. Soft lead was controlled on September 1 and imported lead is to come under regulation on December 1, with scrap lead to follow as quickly as possible. Consumers working under the controlled materials plan will have priority. Mexican export price is quoted 21.50/22c. The Canadian price is 19.50c. f.o.b. Toronto. Austrian output for the first eight months of the year is reported as 6,063 tonnes of soft and 1,050 tonnes of hard lead, practically the same as for the same period in 1950.

The U.S. imported heavily in August with a total of 33,749 s.tons which was twice the July arrivals. This was presumably due to the expected imposition on the ceiling price. About 80 per cent was in pigs and bars, principally from Australia, Mexico and Peru. Eighteen per cent was in concentrates chiefly from Bolivia and South Africa. Consumer stocks at the end of the month were lower at 107,042 s.tons.

Tin.—Definite steps to deal more decisively with tin have been taken by the U.S. Defence Production Administration. Mr. Wilson has stated that he is in accord with Mr. Stuart Symington's refusal to pay current world prices and the Government has ceased stockpiling tin so that all available supplies can go to industry. Orders, moreover, are to be issued immediately to reduce tin consumption involving in particular tin plate, brass and bronze. The reason for this latest reaction is stated to be the inability to obtain foreign tin at a "fair and reasonable price." By March next the tinplate industry is expected to feel the draught seriously.

The Bolivian Association of Mining Industrialists and a Medium Mines Association have, in a letter to Mr. Symington, protested strongly against the American policy pointing out that the R.F.C. is a cartel to regulate the price of tin and maintaining that even at 150c. their high cost producers would not be able to operate profitably.

General Wilson last week confirmed in Singapore that there was no shortage of tin in the U.S. and supplies were comfortable. The Tin Mission, of which he is the head, has been touring Malaya and after spending three days in the Kinta Valley left for Penang last Monday. The Mission is reported to have visited many dredges and opencast mines in the most dangerous areas. Leading Malayan tin circles told the Mission that unless the price rises a slump will develop in Malayan tin mining, more particularly in the Chinese operated undertakings, upon which attacks are said to be increasing. They also stressed the shortage of mining land and the cessation of prospecting. As illustrating this last point, Sir John Hay, chairman of the Renong Tin Dredging Company, in his statement to the shareholders, reported in another column, mentioned how the terrorists had removed or destroyed most of the boring equipment engaged in prospecting a new area to which they hope to move their Gombok dredge and that the management had been informed officially that protection could not be provided; consequently they could not prospect further. Unless, therefore, the eventual report of the Mission induces the United States Government to modify the attitude now definitely adopted of endeavouring to force lower world prices we must expect that the long threatened reduction of the Malayan output will ensue not only there but elsewhere, and unless the U.S. can permanently curtail its tin requirements they may have eventually to pay higher prices than those now ruling.

Indonesian output continues to run rather under last year's figures; the October total was 2,562 tons against 2,663 in September and for the ten months was 25,295 tons (26,645 a year ago).

Production of metal at the Longhorn Smelter in October fell further to 2,091 tons, the lowest figure since December, 1943. However, production for the ten months was 27,310 tons against 25,924 tons for the same period last year. The absence of Bolivian concentrates is being increasingly reflected in the output of the smelter and a further decline is anticipated during the current month, estimates being something like 1,600 tons.

Zinc.—The American Zinc Institute reports a sharp rise in output from domestic smelters in October with a total of 79,493 s.tons against 70,633 s.tons in September. This figure is the biggest since May. The increase was practically all in high and special high grades, and the result is that some 10,000 tons additonal metal was available for the consumer. Stocks at the end of October had risen to 23,084 s.tons from 17,235 a month earlier.

The American Zinc Co. hopes to increase its production by 7,200 s.tons for defence purposes. The Corpus Christi plant of the A.S. and R. is being further enlarged as part of the $24,000,000 improvement programme of the company. Last year this plant produced some 37,500 s.tons of special high-grade. *The Northern Miner* believes that the operations of the Pend Oreille Mines and Metal Co. will result in a major new zinc-lead field in Washington to gradually take the place of the Tri-State district. The grade is low but large-scale working should make it economic.

Antimony.—The U.S. price for 50/55 per cent antimony has been lowered to $5.50/$6.00 per s.ton unit as compared with $6.25/$6.50 previously. In Great Britain the price has been reduced from £390 to £365 per ton for 99 per cent metal.

Asbestos.—Output of asbestos in Southern Africa continues to run ahead of the figures of last year. The Southern Rhodesian output of the first nine months was 58,427 s.tons valued at £4,020,576—not far short of the value of the gold produced which was £4,501,633. Production in the Union for the first six months of the year was 49,273 s.tons (41,983 for the first half of last year).

Sulphur.—The Sulphur Committee of the International Materials Conference estimates a shortage of supplies in the free world next year of about 12 per cent as compared with 11 per cent in the present year. The new Louisiana salt dome will not come into production until late in 1953. Quarterly exports of U.S. sulphur should run about 240,000-250,000 tons, unless additional supplies to Europe become available from pyrites and other sources. World consumption of sulphur in all forms has risen rapidly in the last few years and it is estimated for 1951 at 12,975,300 tons and for 1952 at 14,119,500 tons.

Tungsten.—The wolfram market remains steady with the price unchanged at 515s. to 525s. per unit. It is reported that the French authorities have arranged to buy considerable quantities of Portuguese wolfram for the current quarter. The United States continue to make purchases on a fairly large scale at a price in the neighbourhood of $61 per s.ton unit.

The situation in Portugal is discussed by our Oporto Correspondent in another column.

The London Metal Market

(From Our Metal Exchange Correspondent)

The tendency during the week has been towards lower levels and this has been brought about rather by lack of support than by selling pressure. Consumers are taking in tin at a normal rate but there is no sign of that little extra demand which causes a firmness in the market. There have been no new pronouncements from America except for the usual talk of further cutting down in allocations of metal, and a confirmation that stockpile buying has ceased.

In the East new exchange regulations have been brought into force but comments on them are not available in London as no official copy of them has reached here, but it is expected that they will have the effect of lessening the demand from some quarters.

Positions in other metals are unchanged except that during the week there has been a slight easing of prices in Europe.

On Thursday the official close on the tin market was: Settlement price £995, Cash Buyers £990, Sellers £1,000; Three months' Buyers £960, Sellers £965. In the afternoon the market was quiet and slightly easier. Turnover for the day was 90 tons. Approximate turnover for the week was 980 tons

The Eastern price on Thursday morning was equivalent to £975 17s. 6d. per ton, c.i.f. Europe.

Iron and Steel

Regarding the preparation of plans to restore the industry to full scale activity there is scant information. The allocation scheme for general and alloy steels has been postponed and will not now come into operation until February 4—three months later than was originally planned. This will give the industry time to revise the system with the object of ensuring more equitable distribution. But shortages in present circumstances are unavoidable and short-time working in many small industrial establishments may be the inevitable consequence.

The Chancellor of the Exchequer estimates the country's requirements of finished steel at about 1,500,000 tons over and above the combined level of current home production and imports. This is equivalent to a deficiency of approximately 10 per cent. If, however, re-armament and other orders are given 100 per cent priority, other branches of industry will have to suffer more severe cuts. The motor car industry, for example, is operating on a 15 per cent cut in sheet steel and there is no certainty that further restrictions will not be imposed. Not surprisingly the black market in steel has assumed considerable dimensions and many cases are now being investigated.

Of plans to restore production to 1950 levels, nothing has transpired, though this is the obvious remedy. Shortage of scrap is the main difficulty. This week a steel plant on the north-east coast is working only 12 shifts instead of a normal 17 simply because of the lack of scrap. Total scrap stocks at the end of last month were about 300,000 tons which represents rather less than two weeks' consumption.

Pig iron production is on a rather better scale and outputs could be further extended if coke supplies were assured. Fairly good stocks of foreign ore have been accumulated and raisings of native ironstone are steadily increasing.

NOVEMBER 15 PRICES

COPPER

Electrolytic	£227 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid	£175 0 0 d/d
Soft empire, including secondary lead	£175 0 0 d/d
English lead	£176 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid	£190 0 0 d/d
G.O.B. spelter, domestic	£190 0 0 d/d
Electrolytic and refined zinc	£194 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£365 per ton
Crude (70%)	£290 per ton

NICKEL

99.5% (home trade)	£454 per ton

OTHER METALS

Aluminium, £124 per ton.	Platinum (scrap), £33.
Bismuth, 28s. lb.	Platinum, £27/£33 5s. nom.
Cadmium, 18s. 9d. lb.	Rhodium, £45 oz.
Chromium, 6s. 3d. lb.	Ruthenium, £30 oz.
Cobalt, 17s. 6d. lb.	Quicksilver, £73 10s./£74 ex-warehouse.
Gold, 248s. f.oz.	Selenium, 25s. nom. per lb.
Iridium, £65 oz. nom.	Silver (bar), 77d. f.oz. spot and forward.
Magnesium, 1s. 6d. - 2s. lb. according to quantity.	Tellurium, 19s. lb.
Osmiridium, £35 oz. nom.	
Osmium, £70 oz. nom.	
Palladium, £8 10s. oz.	

ORES, ALLOYS, ETC.

Bismuth	40% 14s. 9d. lb. c.i.f. 30% 12s. 9d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 per ton c.i.f.
,, ,, (concentrates)	£13 per ton c.i.f.
,, ,, Refractory	£12 12s. per ton c.i.f.
Baluchistan Metallurgical	£13 18s. 6d. per ton c.i.f.
Magnesite, ground calcined	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Manganese, Best Indian	(Nominal)
Molybdenite (85% basis)	103s. 1½d. per unit c.i.f.
Wolfram (65%), U.K.	515/525s. nom. c.i.f.
Tungsten Metal Powder (for steel manufacture)	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9d. d/d per ton
Ferro-manganese, home	£40 12s. 8d. per ton
Ferro-manganese, export	Nom.
Brass Wire	2s. 7½d. per lb. basis.
Brass Tubes, solid drawn	2s. 1d. per lb. basis.

The Mining Markets

(By our Stock Exchange Correspondent)

There are signs that many investors are bewildered by the continued fall in Stock Exchange prices. These have been particularly severe in the Gilt-edged market where sustained selling and the total absence of buyers have brought about large scale declines. Many "blue chip" industrial equities have conformed to this trend, although with a less pronounced drop. From these results it would appear that many people expect a further rise in the bank rate during the next few months, accompanied by some measure of deflation. Whether this will in fact transpire remains to be seen. While it seems clear that the Government is determined to check inflation, it by no means follows that deflation will result to any appreciable extent during the next year or so. The gap in the overseas balance of trade figures for the year now stands at the staggering amount of over £1,000 million. The artificial demand caused by the rearmament programme should go a long way towards taking up any slack caused by falling off in demand for manufactured goods.

The first faint rumours of possible deflation which have touched the market since the beginning of the Korean war brought about a firmer tone in gold shares. Kaffirs were of course the chief beneficiaries. Finance houses generally improved with Consolidated Goldfields leading the way. This company declared an annual dividend of 15 per cent as compared with 12½ per cent paid for the previous eight years. Profits of the wholly owned subsidiary New Consolidated Goldfields are up at £1,347,910 from £1,283,797. This highly satisfactory result took markets by surprise. The full report and accounts will be awaited with interest. West Rand Investment Trust shares also proved a favourite. The trust is interested in Blyvoors, West Driefontein, Doornfontein and other potentially rich mines of the far West Rand, most of which are still in the development or early production stages.

As we went to press last week the results from Western Holdings No. 2 shaft were announced. These gave overall values of 652 in.-dwt. and, taken with the results for No. 1 shaft already announced, give a much more cheerful picture. It is satisfactory to note that reef developments despite some faulting show higher values than borehole results taken on the same sites.

Selling of Eastern tin shares on a market bereft of buyers forced down prices. While this movement may partially be blamed upon the fall in the price of metal, it is significant that Nigerian issues showed little response. The political situation in Malaya is undoubtedly deteriorating and every week further reports of attacks on rubber planters, police and mines come to hand. The visit of the new Colonial Secretary will be welcomed, as it is clear that a much stronger and more effective policy is urgently necessary.

Coppers were patchy but a better undertone was evident. Rhodesia Katanga shares recently came to life and changed hands at about 6s. after being only 3s. last week. All work on the Kanashi mine was stopped in 1938 and plant and machinery was disposed of. Recently, the directors announced that an agreement for deep drilling had been reached with Anglo American Corporation, and advised shareholders to retain their holdings pending receipt of a circular letter from the Board convening an extraordinary general meeting.

In the lead/zinc section Mount Isa Mines declared a final dividend of 15 per cent on the increased capital, making 25 per cent for the year. This compares with 15 per cent for 1950. The net profit is up by £A.590,084. Lake George Mines are paying 70 per cent for the year against 40 per cent for 1949/50. Group profit was up at £372,549 against £137,935. The company is registered in the U.K. and consequently suffers from very heavy taxation.

FINANCE	Price Nov. 14	+ or − on week
African & European	3½	− ¼
Anglo American Corpn.	8	+ ½
Anglo-French	22/6	−1/3
Anglo Transvaal Consol.	39/4½	
Camp Bird	13/3	−4½d
Central Mining (£1 shrs.)	43/9	−7½d
Consolidated Goldfields	53/9	+3/9
Consol. Mines Selection	37/6	+7½d
East Rand Consols	4/1½	+3d
General Mining	5⅝	+ ⅛
H.E. Prop.	37/6	−7½d
Henderson's Transvaal	15/3	−3
Johnnies	3⅛	+ ⅛
Rand Mines	7	+ ⅛
Rand Selection	48/9	+1/10½
Union Corporation	10½	+ ⅛
Vereeniging Estates	5⅛	− ⅛
Writs	36/3	+2/6
West Wits	46/3	

RAND GOLD		
Blyvoors	49/6	+1½d
Brakpan	19/-	+3d
City Deep	2⅛	+ ⅛
Consol. Main Reef	2⅛	+ ⅛
Crown	4⅛	+ ⅛
Daggas.	3⅛	+ ⅛
Dominion Reefs	1/9	
Doornfontein	24/3	
Durban Deep	3⅛	+ ⅛
E. Daggas	26/10½	+7½d
E. Geduld ... (4/- units)	53/1½	+1/1½
E. Rand Props.	4⅜	+ ⅛
Geduld	7⅜	+ ⅛
Grootvlei	38/9	
Libanon	15/6	
Luipaards Vlei	23/3	+3d
Marievale	23/6	+3d
Modderfontein B.	5/-	
Modderfontein East	32/6	
New Kleinfontein	31/3	
New Pioneer	21/-	+1/-
Randfontein	18/3	−3d
Robinson Deep	15/-	
Rose Deep	36/3	
Simmer & Jack	6/9	
Springs	9/6	+1½d
Sub Nigel	3⅛	+ ⅛
Van Dyk	14/6	+6d
Venterspost	28/1½	+1½d
Vlakfontein	18/3	+3d
Vogelstruisbult	28/3	+6d
West Driefontein	6⅜	+ ⅛
W. Rand Consolidated	44/4½	+7½d
Western Reefs	44/4½	+1/3

O.F.S.	Price Nov. 14	+ or − on week
Alpha F.S.A.	9/6	
Blinkpoort	22/6	+1/3
Central Mining F.S.	4/10½	+6d
Freddies	11/3	+6d
Freddies N.	11/9	+1/-
Freddies S.	12/-	+3d
F.S. Geduld	3⅜	+ ⅛
Geoffries	24/9	
Harmony	24/6	+1/3
Lydenburg Estates	10/6	+6d
Middle Wits	23/-	+3d
Ofsits	46/10½	+1/10½
President Brand	20/9	+1/3
President Steyn	18/9	+7½d
St. Helena	29/-	+10½d
U.F.S.C. & G.	8/6	
Virginia Deb.	76	
Virginia Ord.	12/6	+3d
Welkom	37/6	+7½d
Western Holdings	3⅜	+ ⅛

WEST AFRICAN GOLD		
Amalgamated Banket	2/4½	+1½d
Ariston	7/3	+3d
Ashanti	29/6	−9d
Bibiani	9/9	−3d
Bremang	3/-	
G.C. Main Reef	3/7½	+1½d
G.C. Selection Trust	8/6	−3d
Konongo	3/6	+1½d
Kwahu	4/6	
London & African Mng.	2/-	−3d
Lyndhurst Deep	1/7½	
Marlu	2/-	
Nanwa	8d	−1d
Taquah & Abosso	7/6	

AUSTRALIAN GOLD		
Boulder Perseverance	3/1½	
Gt. Boulder Kalgoorlie	13/-	
Great Boulder Prop.	7/6	
Great Western Consol.	6/6	
Lake View and Star	20/7½xd	−7½d
Mount Morgan	19/3	
North Kalgurli	17/3xd	−9d
Paringa	9d	
Sons of Gwalia	12/-	
South Kalgurli	8/9	+3d
Western Mining	8/9	+3d
Wiluna	13/6	

MISCELLANEOUS GOLD		
Cam and Motor	37/6	+7½d
Champion Reef	9/-	+3d
Falcon Mines	10/-	−6d
Globe & Phoenix	24/9	

MISCELLANEOUS GOLD (contd)	Price Nov. 14	+ or − on week
G.F. Rhodesian	8/6	+9d
London & Rhodesian	6/10½	+9d
Motapa	2/7½	−1½d
Mysore	8/4½	+1½d
New Guinea	1/7½	
Nundydroog	2/-	+6d
Ooregum	3/3	+3d
Oroville	14/1½	
St. John d'El Rey	40/-	+1/3
Zams	39/-	+6d

DIAMONDS		
Anglo American Inv.	5	+ ⅛
Casts	41/6xd	+3d
Cons. Diam. of S.W.A.	4⅛	+ ⅛
De Beers Defd. Bearer	70/-	+2/9
De Beers Pfd. Bearer	15⅛	+ ⅛

COPPER		
Chartered	69/4½	+4½d
Indian Copper	4/-	
Messina	5⅜	− ⅛
Nchanga	8⅛	+ ⅛
Rhod. Anglo-American	65/3	+1/3
Rhodesian Selection	20/-	−7½d
Rhokana	23⅜	+ ⅛
Rio Tinto	22⅛	− ⅛
Roan Antelope	13/9	+1½d
Selection Trust	47/6	−2/-
Tanks	55/9	
Tharsis Sulphur Br.	55/-	+1/3

TIN (Eastern)		
Anglo-Burma	3/3	
Ayer Hitam	29/6	−1/6
Bangrin	35/9xd	−2/6
Gopeng	15/3	+6d
Hongkong	11/3	−6d
Ipoh	30/-xd	−6d
Kamunting	12/7½xd	−1/3
Kepong Dredging	13/9	−3d
Kinta Tin Mines	17/-	−9d
Kramat Pulai	4/-xd	−6d
Malayan Dredging	23/6xd	−9d
Pahang	16/-	−1/3
Pengkalen	11/9	
Petaling	14/7½	+1½d
Rambutan	16/10½	−7½d
Siamese Tin	24/3xd	−9d
Southern Kinta	16/4½	
S. Malayan	27/9xd	−2/3
S. Tronoh	23/3	−1/9
Sungei Kinta	23/1½	−4½d
Tekka Taiping	10/6	−3d
Tronoh	29/3	−1/-

TIN (Nigerian and Miscellaneous)	Price Nov. 14	+ or − on week
Amalgamated Tin	11/-	−3d
Beralt Tin	24/-xd	−3/3
Bisichi	4/4½	+1½d
British Tin Inv.	17/6	−10½d
Ex-Lands Nigeria	7/-	−3d
Geevor Tin	16/6	−4½d
Gold & Base Metal	4/10½	+3d
Jantar Nigeria	7/9	
Jos Tin Area	11/4½	
Kaduna Prospectors	4/-	
Kaduna Syndicate	5/9	
London Tin	9/9	
Ribon Valley	1/3	
United Tin	3/3	+1½d

SILVER, LEAD, ZINC		
Broken Hill South	53/9	−3/-
Burma Corporation	5/1½	+4½d
Consol. Zinc	35/6xd	−1/6
Lake George	25/9	−1/6
Mining Trust		
Mount Isa	49/-xd	−3/-
New Broken Hill	30/3xd	−1/-
North Broken Hill	73/1½	−3/1½
Rhodesian Broken Hill	20/9	
San Francisco Mines	32/6	−1/3
Trepca	3/7½	−1½d

MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	58/9	−1/3
Associated Manganese	62/-	−2/6
Chinese Engineering	2/9	
C.P. Manganese	47/-	−2/3
Natal Navigation	5⅛	+ ⅛
Wankie	23/10½	−1½d
Witbank Colliery	3⅛	

CANADIAN MINES		
Dome	$33	
Hudson Bay Mining	$128	−1
International Nickel	$87½	+ ½
Mining Corpn. of Canada	£7½	+ ½
Noranda	$168	−2
Quemont	£9	− ½

OIL		
Anglo-Iranian	5⅛	− ⅛
Apex	49/4½	+7½d
Attock	22/6	
Burmah	60/7½	−2/6
Canadian Eagle Bearer	34/9	−1/3
Mexican Eagle	27/3	−6d
Shell	4⅜	− ⅛
Trinidad Leasehold	30/6	−1/9
T.P.D.	36/-	−3d
Ultramar	33/6	−1/6

Company News & Views

Burma Corporation Scheme

The scheme whereby Burma Corporation hopes to resume operations, interrupted by the war and subsequent internal insurrections at its lead-zinc-silver producing Bawdin mines in North Burma, has now been announced and full details of this important pronouncement are given in this issue on pages 504 and 505.

The basic idea is a full measure of partnership between the Union of Burma and the Burma Corporation. The Burma Corporation will be replaced by a new company to be known as Burma Corporation (1951) Ltd., the share capital being jointly held by the Burmese Government and the present Corporation on an equal basis. The company will provide technical knowledge and retain half the equity and the Burmese Government for its part will provide fresh capital of over £2,000,000 and will hold the other half of the equity.

While superficially, at any rate, the scheme seems a rather complicated one, it must be remembered that the Burmese constitution envisages the ultimate nationalization of all undertakings engaged in exploiting the country's natural resources. The Corporation has taken this into account as well as the constitutional developments and the trend of political thought in the Union of Burma and believes that the scheme is the best way of obtaining the substantial funds necessary to enable mining operations to be resumed.

The capital of the new company will be Rs.63,194,600 divided into shares of Rs.10 each. Initially, the Burmese Government will pay Rs.5 As.3 on the shares which it holds and will pay the balance in annual instalments over a 10 year period.

An unexpected feature of the new scheme is that Burma Corporation shareholders will receive, in addition to a one-for-one allocation of shares in the new holding company operating in Burma, one share in Non-Ferrous Metal Products, a subsidiary company which handles the Corporation's business in the United Kingdom, for every share held in the Corporation.

The agreement gives the Burmese Government the right to acquire compulsorily any or all shares held by the present Corporation in the new company on payment in sterling.

Cementation's Well-Filled Order Book

The statement by Mr. Harry Clayton, chairman of Cementation, to be read at the company's annual meeting on December 6 should breed a good deal of confidence, if that were necessary, in the company's new issue to stockholders of 6,500,000 new ordinary 1s. shares at 1s. 9d. per share. This "rights" issue, together with an addition of £100,000 to the unsecured loan of £500,000 will secure to the company £668,750 (less expenses of the issue and loan) and this amount should, the chairman states, be sufficient to finance the continuing expansion of the group for some time to come.

The fresh funds are obviously needed for considerable resources will be necessary to carry out the volume of work on the company's order-books which, at March 31 last was no less than £8,000,000 as compared with £5,000,000 in the previous year.

The latest balance sheet shows that Group cash and investment holdings totalled £227,179 but this figure was almost wholly offset by a bank overdraft of £217,718. Further, outstanding commitments for capital expenditure at the company's fiscal year-end, March 31 last, was approximately £283,000.

The company's dividend of 15 per cent will, it is expected, be maintained on the increased capital. The company's financial results were given in last week's issue.

Renong Tin Pays More, Earns Less

The laying up for repairs of the Renong Tin Dredging Co.'s No. 2 dredge for the first six months of the year to June 30 accounted for the fall in output of tin ore by 260 tons to 748 tons. Lesser factors contributing to the lower production were the limitation on working time through power restrictions and the difficult ground encountered in the Gombak property. The current financial year will see the completion of the mining of virgin land on this latter property although, as the result of test borings being carried out, it is hoped to retreat parts of the area profitably.

The table below showing the operating results for the past two years has been made up from the combined operating results from both of the company's properties, Rasa and Gombak, which masks the importance to the company of its Rasa property. During the year under review the dredge working Rasa only treated a little over 500,000 cu. yd. of the total ground, yet output from this section was 243 tons recovered from ground yielding some 17 oz. per cu. yd. compared with 8.5 oz. per cu. yd. from Gombak.

Year to June 30	*Dredged (cu. yd.)*	*Average Value per cu. yd. (oz.)*	*Average Assay Value (%)*	*Output Tin Ore (tons)*	*Tin Sales £*
1950	2,986,373	11.39	76.07	908	388,321
1951	2,636,251	12.85	75.67	748	578,733

Sir John Hay's statement to shareholders circulated with the accounts states that the No. 2 dredge is in operation again which probably accounts for the vastly improved results for the first three months of the current year, in which 239 tons were produced as against 145 tons in the corresponding period during the year under review.

The profit and loss account in nowise reflects the decline in output as "due to the unprecedented price level reached for tin during the year." Profit before tax attained the record figure of £277,519 against £127,682. In addition to the £88,394 paid to the Malayan Government in duty on tin ore, taxation liabilities for the two countries amounted to £156,186 (£80,333). A sum of £22,824 was allocated to depletion of mine property, which amount takes care of the balance of cost standing against the Gombak property now nearing exhaustion. A Reserve for replacement of equipment was established during the year and received an initial transfer of £50,000. Dividend payments were stepped up to 35 per cent against 25 per cent requiring a net amount of £32,812, and after this and all other charges had been met, the balance remaining to be carried forward was higher at £33,122 against £25,941.

Shareholders will recall that during the previous year £20,000 was set aside for prospecting operations, and although a promising area was found, terrorist activity made the continuation of investigations impractical. At the present time, the company is engaged on two other propositions, but a decision concerning them cannot be taken for some time to come. All this activity ties up with the question of what to do with the Gombak dredge when the ground upon which it is working is exhausted for if, as a result of negotiations, another property is acquired, considerable expense will obviously be involved in dismantling and moving the dredge to the new site, and it will also mean that the dredge will be out of action for 12-18 months. This is a real problem for the company and was the explanation given by Sir John Hay in his statement for the somewhat conservative dividend distribution to stockholders during the year under review.

Perak River Hydro-Electric Pay Three Years' Arrears

Revenue from the sale of current, etc., of the Perak River Hydro-Electric Power Company for the year ended July 31 was up from £971,338 to £1,138,781. Expenses were heavier but the net revenue for the year of £675,154 showed up well against the previous year's earnings of £591,371. From the £249,064 (£198,327) available, the sum of £107,150 against £111,575 was allocated to depreciation account, and £103,803 (£112,757) was appropriated to pay the final instalment of the Guaranteed Debenture Stock Sinking Fund and the balance of the advances made to the company by H.M. Treasury. Thus the £1,250,000 5 per cent Guaranteed Debenture Stock has been fully redeemed and no charge now exists on the assets of the company. Taxation charges were heavier, being £80,000 more at £300,000. An amount of £50,000 (£40,000) was transferred to the fuel equalization reserve and after distributing £98,438, an initial payment representing three years' arrears of dividends for 1941-2, 1942-3, 1943-4 on the company's £1,250,000 5 per cent Cumulative Preference Shares of £1 each, the balance remaining to be carried forward was £100,626 against £58,327 previously.

Mr. William Shearer is chairman and the annual meeting will be held in London on November 30.

Company Shorts

Anglo-French Offer Over-Subscribed Eight Times.—The Anglo-French Exploration Company has announced that the recent offer of 50,000 Ordinary Shares of £1 each, at par, was over-subscribed eight times. Allotment letters were posted on November 8.

Rukuba Tin Mines Earns More.—Rukuba Tin Mines for the year ended March 31 produced 20.75 tons tin ore against 21.75 tons tin previously. Profit for the year after charging depreciation, etc., was £3,772 (£696). Taxation charges were much heavier at £1,586 (£300), no dividend was paid and the profit and loss account debit balance carried forward, after writing off £902 (£648), was £123 against £1,407.

Middle Witwatersrand (Western Areas) Borehole Result.—Middle Wits has announced that in borehole TL29 situated approximately 3,300 ft. N.W. of Common Corner Beacon of the Klerksdorp Townlands 44, Zandpan 43 and the mining lease of Western Reefs Exploration-and-Development, the Vaal reef was intersected at 6,447 ft. assaying 220.5 dwt. over a corrected width of 5.7 in. equivalent to 1,257 in.-dwt. Core recovery was nearly complete and a deflection will be made.

New Nigel's Holding of Geoffries.—Net profit of New Nigel Estate and Gold Mining for the year ended June 30 after providing for all expenses and £13,863 (£21,500) for taxation was £41,235 against £81,872. From the £77,204 (£161,839) available, £20,000 (£50,000) was transferred to fixed assets reserve, the dividend of 5 per cent (5 per cent and bonus of 5 per cent) required £24,734 leaving a total amount of £18,607 to be carried forward against £20,506 previously.

At June 30 the company's share investments at cost appeared in the balance sheet at £460,789 while the market value at same date was £1,276,932 the surplus being due largely to its substantial holding in "Geoffries."

Increased Production at Broken Hill Prop.—"Plant operations were largely governed by the inflow of coal," states Mr. Essington Lewis, chairman of Broken Hill Proprietary, in his address circulated with the company's report and accounts for the year to August 31. Although coal supplies were not satisfactory, pig iron production increased by 112,419 tons to 738,877 tons and steel output improved by 72,117 tons to 757,064 tons.

Net profit amounted to £1,723,750 (£1,335,815) which figure was arrived at after providing £1,209,328 for depreciation and £1,000,000 (£800,000) for taxation. Two dividend payments of 10d. each were declared during the year absorbing £1,539,391, leaving the carry forward at £379,932 compared with £195,573.

Mount Lyell Pays More on Larger Capital.—A preliminary announcement from the Mount Lyell Mining & Railway Co. shows that net profit for the year to September 30 was £195,829 against £95,447. This figure was struck after charging prospecting and development £15,655 (£5,082), depreciation £47,566 (£36,374) and tax liabilities of £70,000 against £2,000.

The directors are recommending the payment of 6¼ per cent on the existing capital of £2,325,000 which compares with the 5 per cent paid last year on £1,550,000 and a proportionate dividend of 5/6 per cent on the £775,000 new shares issued at par in the ratio of one for two in June, 1950.

West Wits Results.—The profit and loss account of West Witwatersrand Areas for the year to June 30, showed that income from investments amounted to £534,639 against £511,716 previously. Drilling expenses were less, £53,003 against £80,740, drilling charges much the same, £39,208 against £37,369, but taxation was lighter being £20,118 against £64,681. The dividend of 1s. 3d. (same) on the £800,800 issued capital required £400,400 and the carry forward was £77,766 compared with £36,129.

The latest balance sheet shows shareholdings, at cost, of £6,162,532 (£6,158,532), the portfolio consisting largely of Venterspost, Libanon, Blyvooruitzicht, West Driefontein, Doornfontein and Western Ultra Deep.

Preliminary Results from Lake George.—Profits and dividends of Lake George, the baby of the New South Wales lead-zinc producers, show a good advance over the previous year. Group profits, after meeting heavier depreciation charges and an onerous burden of taxation, £519,742 against £294,845, were £372,549 compared with £137,935. Dividend payments were stepped up by the declaration of a final distribution of 2s. to 3s. 6d. against 2s. in the preceding year. The sum of £100,000 was reserved against future U.K. taxation, £18,855, being Australian taxation overprovided, has been brought in and with the balance of £85,753 (£79,519) from last year there remains £169,032 to be carried forward.

The annual meeting will be held in London on January 15, 1952.

New Zealand Mines to Wind Up.—At the last annual meeting of the Consolidated Goldfields of New Zealand in September last, it was stated that in view of the collapse in the South shaft of Blackwater mines, which had resulted in the loss of the mine, steps were being taken to liquidate the company. As the realization of that company's plant and machinery was not expected to yield sufficient to meet its liabilities in full, no value could be attached to the holding of Blackwater Mines Shares. As this interest constituted the main asset of Consolidated Gold Mines of New Zealand, there was no alternative but to recommend liquidation.

Thus it will come as no surprise to shareholders of Consolidated Goldfields of New Zealand and of Blackwater Mines that at the Extraordinary meetings of these companies to be held in London on November 30, resolutions will be submitted for the voluntary liquidation of both companies.

INCO Earns $1.09 per Share in September Quarter.—The report of The International Nickel Co. of Canada, Ltd., and subsidiaries for the three months ended September 30, 1951, issued by Dr. John F. Thompson, chairman and president, shows net earnings in terms of U.S. currency of $16,349,814 after all charges, depreciation, depletion, taxes, etc., equivalent, after preferred dividends, to $1.09 per share on the common stock.

In the three months ended June 30, 1951, net earnings were $14,653,656, equal to 97c. a share on the common and in the third quarter of 1950 net earnings were $13,534,752, or 90c. a common share.

For the nine months ended September 30, 1951, net earnings were $45,734,860, equal to $3.03 a share on the common, compared with $33,920,434, or $2.23 a common share, in the corresponding period a year ago.

Wit Nigel's Continued Improvement.—Although Witwatersrand Nigel's net profit of £38,273 (£24,671) for the year to June 30, 1951 was not enough to enable the company to pay its maiden dividend it was the best result obtained since 1945 when earnings ran to approximately £43,000. The sum of £230,676 (£201,307) was available for appropriation out of which £1,411 (£893) was allocated to silicosis liability leaving £230,676 (£201,307) to be carried forward.

Tons milled during the year at 119,000 was better by 3,000 over the previous year, the yield per ton held steady at 5.09 dwt. (5.34 dwt.) while working costs including development charges only advanced by 5d. to 60s. 10d. Development footage advanced totalled 18,740 ft. (17,285 ft.) the payability being 39 per cent averaging 13.5 dwt. over 17.8 dwt. Ore reserves continued to improve and at the fiscal year end amounted to 661,000 tons averaging 4.5 dwt. over 37 in. against 628,000 tons the value and width being the same.

Mount Isa's Higher Net Profit.—The director of Mount Isa Mines, the Australian silver and base-metal company, at the annual meeting to be held in Brisbane on December 3, will recommend the payment of a final dividend of 15 per cent, making 25 per cent for the year ended June 30, 1951. This distribution compares with a single payment of 15 per cent

previously. The final payment is made on a capital increased by the acquisition of over 95 per cent of the issued capital of Mining Trust.

Subject to approval, dividend warrants will be posted in respect of £A.4,907,885 stock on December 31 to stockholders registered on November 23, and in respect of 849,427 shares of £A.1, on December 31, or as soon thereafter as the necessary exchange formalities have been completed to shareholders of the Mining Trust registered on the books of that company as at November 7.

The net profit for the year to June 30 was £A.1,360,842 against £A.770,758 after providing £A.1,745,665 for taxation (£A.520,000), and £A.578,364 (£A.400,000) for depreciation.

Rhodesia-Katanga Members Advised to Hold Shares.—In the last report and accounts of Rhodesia-Katanga, the directors stated that all work at the Kansanshi, a copper and gold mine in North Western Rhodesia, was stopped in 1938 and the plant and machinery had been disposed of. The oxidized ores so far developed were not, under the existing conditions, of economic value. Unless therefore, the directors' statement continued, a workable deposit of sulphide ores could be proved at depth, the values at which the mine and the shafts are carried in the books must be regarded as considerably less than shown. The chairman in his last statement to shareholders, said that with regard to the Kansanshi mine, an American mining company had under consideration the question of taking an interest in the mine, but had decided not to proceed further and that the board was endeavouring to obtain a loan for a deep drilling programme.

This provides the background for Rhodesia-Katanga's announcement at the end of last week that agreement has been reached for the financing of the deep drilling programme at the mine in partnership with, and under the technical supervision of, the Anglo American Corporation of South Africa. The directors have advised shareholders not to sell their stock pending the receipt of a circular letter from the board and a notice convening an extraordinary meeting of the company to approve the signature of the necessary agreements in the matter.

Trinidad Leaseholds to Increase Dividend.—At the annual meeting of Trinidad Leaseholds, to be held on December 18 the directors will recommend the payment of the final dividend of 7d. per 5s. stock unit free of tax in respect of the year ended June 30 to all those registered on the books on November 20. This final dividend brings the total distribution for the year to 16⅔ per cent against 14 per cent (net) paid last year.

Subject to final audit consolidated net profit after all charges, including taxation charges of £3,201,935 (£1,638,719) and after transferring £257,592 (£169,475) to contingencies reserve, was £1,470,705 against £906,399 including investment income. The whole of the foregoing was attributable to the holding company while the profits obtained by subsidiary companies totalled £401,225 (£216,266) and the net profit for the year, after contingencies dealt with in the holding company's accounts was £1,069,480 (£690,133).

Reserves in the holding company's accounts received £700,000 against £450,000 and after allowing for the dividends both paid and proposed which will absorb £273,242 (£229,523), there remained to be carried forward £330,007 against £233,769 previously.

The directors state that the volume of oil sold by the group and its allied interests was a record and that sales again increased. Although all elements comprising operating costs continued to rise, and more oil was purchased at higher costs, selling prices improved. Tanker earnings were favourably affected by the recovery in freight rates. The results of the group also benefited from the inclusion for the first time of the earnings of Siparia Trinidad Oilfields, which became a wholly owned subsidiary early in the year.

The reports and accounts will be issued on or about November 27. Mr. S. J. Vos is chairman.

American Smelting to Develop Lead-Zinc Areas in Nigeria.—In his review accompanying the report and accounts of London & African Mining Trust for the year to September 30, 1951, the chairman, Mr. W. J. C. Richards, informed shareholders that American Smelting and Refining would undertake to provide all the capital required to bring the lead-zinc areas in Southern Nigeria held by Mines Development Syndicate (West Africa) into production. This is, however, contingent upon lease terms being granted by the Nigerian Government sufficiently satisfactory to proceed with development if the deposits examined merit exploitation. This last statement is of a formal nature as the chairman adds that agreement "on all important points" concerning the lease have been agreed between the Nigerian Government, American Smelting and Refining and Mines Development. It is expected, Mr. Richards continued, that the draft lease will be submitted to the Nigerian legislature not later than next March. The last report of American Smelting stated that results to date on the property indicated the possibility of establishing a lead zinc operation of substantial size.

During the last two years exploratory work in the area has been proceeding and one of the most encouraging features has been the discovery of a new virgin lode at Ameri which, it is expected, will provide sufficient ore to justify shaft sinking with a view to production. Milling tests on this ore made in the U.K. and the U.S.A. have indicated that recoveries of lead and zinc are very high.

If the lead zinc areas in question are brought successfully into production some of the companies which stand to benefit are Gold and Base Metals, Nigerian Consolidated, London and African, United Tin Areas, Ex-Lands Nigeria and Ribon Valley all of which hold an interest in Mines Development Syndicate.

The profit and loss account of London and African reveals a working profit of £15,869. Taxation required £1,075, the sum of £20,655 was written off investments and the forward debit balance was reduced from £298,383 to £281,259. To eliminate this debit balance a capital reorganization is to be proposed whereby 3s. will be written off each of the 1,875,058 issued 5s. units, the present authorized capital of £500,000 to be subsequently restored.

Mufulira and Roan Antelope Quarterly Results.—The quarterly reports of Mufulira and Roan Antelope cover three months to September 30. Although the rise in the copper price by £24 to £220 per ton effective as from May last is reflected in the September quarterly profits of both companies, profit, before tax, of Mufulira is well down compared with the preceding quarter's results. However, Mufulira's copper sales in the June quarter were swelled by large sales resulting from the company overtaking its smelting arrears.

The feature of Roan's results is that while sales showed a small decline, revenue for the quarter improved on that of the preceding three months.

The tables below furnish details of the September quarter's results together with those of the preceding quarter and the September quarter, 1950, for both companies.

Mufulira	*September Quarter (1951)*	*June Quarter (1951)*	*September Quarter (1950)*
Production .....l.tons	17,668*	29,818	20,763
Sales.....l.tons	16,918	28,438	20,863
Revenue.....	£3,434,000	£5,276,000	£3,410,000
Costs	£1,452,000	£2,131,000	£1,264,000
Difference in value of copper stocks.....	£223,000†	£59,000†	£68,000†
Surplus	£2,205,000	£3,204,000	£2,214,000
London Expenses	£24,000	£24,000	£18,000
Replacements‡.....	£175,000	£175,000	£175,000
Profit before taxation.....	£2,006,000.	£3,005,000	£2,021,000

*Before deduction of 106 l.tons used for fabrication into refinery equipment.
†Credit.
‡Subject to revision when year's accounts considered.

Roan Antelope	*September Quarter (1951)*	*June Quarter (1951)*	*September Quarter (1950)*
Production..... l.tons	19,902	20,599	17,795
Sales.....l.tons	19,902	20,599	20,145
Revenue.....	£4,040,000	£3,822,000	£3,334,000
Costs	£1,652,000	£1,710,000	£1,361,000
Difference in value of copper stocks.....	£35,000*	£22,000*	£119,000†
Surplus	£2,423,000	£2,134,000	£1,854,000
London Expenses	£35,000	£34,000	£28,00
Replacements‡.....	£225,000	£225,000	£225,000
Profit, before tax.....	£2,163,000	£1,875,000	£1,601,000

*Credit.
†Debit.
‡Subject to revision when year's accounts considered.

Rhodesian Selection Trust which controls Mufulira, together with Roan Antelope have announced that for various reasons resulting from the recent reorganization of their respective capital structures, it will not be practicable to issue the annual report and accounts for the year to June 30, 1951 until early in 1952. At the annual meetings to be held next month motions will be submitted to adjourn the proceedings until early in 1952.

BURMA CORPORATION, LIMITED

(Incorporated in Burma)

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Scheme for closer collaboration with the GOVERNMENT of the UNION OF BURMA

To the Notice of MEETING, issued on the 9th November, 1951, and set out below, the following Letters were appended:

CHAIRMAN'S LETTER:

37, Dover Street, London, W.1.
9th November, 1951.

To the Members of

BURMA CORPORATION, LIMITED.

Dear Sir (or Madam),

In my statement to shareholders which accompanied the last annual report and accounts reference was made to an arrangement under negotiation whereby the Government of the Union of Burma is offered a participation in the industry. These negotiations have recently been satisfactorily concluded and it is for me now to submit the results for your approval.

As you are aware mine production has been at a standstill since the beginning of 1949 due to the unrest in central and lower Burma which caused the suspension of rail traffic between Namtu and Rangoon on which our operations depend. The statement referred to above also summarised the difficulties we had encountered in reducing expenditure at Namtu to a minimum care and maintenance basis.

Towards the end of 1950, due to the improvement in security conditions in Burma, limited river traffic between Rangoon and Mandalay became possible to connect with the rail link between Mandalay and Lashio on which the Gokteik Viaduct has now been restored. Despite the still existing problem of insurgent activity along these lines of communication, we have, with the co-operation of Government authorities, been able to despatch urgently required fuel supplies to Namtu and with the use of these to commence smelting operations to treat accumulated stocks of metalliferous materials and to transport treated metal to Rangoon for sale. The realisation of products thus made available for sale has, meanwhile at least and in spite of the considerably enhanced cost of this means of transport, provided the Corporation with sufficient revenue to meet essential expenditure, but this has only been possible as a result of the existing high world prices for our metals and a very large degree of assistance and co-operation from the Burma Government.

The Constitution of the Union of Burma envisages the ultimate nationalisation of all undertakings engaged in the development and exploitation of natural resources, and new regulations now in force and designed towards implementing that objective have an important effect on our operations and in particular on the terms of mining leases in regard to the employment of labour. This prospect of nationalisation, however remote it may be in any particular case, circumscribes the outlook of an enterprise such as ours and cannot but affect our essential relations with Government and Labour. The conclusions at which your Board have arrived are based solely on considerations relating to our own enterprise and its particular circumstances.

These circumstances and others closely allied to the general situation in Burma have served to convince your Board that the prospects of the industry depend upon a closer association of the Burma Government in its finance and direction and indeed that without such close association the industry would not have the maximum opportunity for successful operation in the future.

Accordingly a scheme of re-organisation is recommended, the terms of which are contained in Heads of Agreement which have been agreed between the Corporation and the Government of the Union of Burma. These will become effective when ratified by the passing of the resolution set out in the accompanying Notice of Meeting and the final confirmation of the President of the Union of Burma within fourteen days of the passing of such resolution.

A summary of the principal clauses contained in the Heads of Agreement is contained in the accompanying letter from the Secretary of your Company.

Your Board of Directors fully appreciate that the proposals made to the Government of the Union of Burma probably constitute an unusual step, and it is one which has been taken only after very careful consideration of the special factors concerned. We believe that the organisation of our enterprise should take due regard of constitutional developments and of the trend of political thought in the Union of Burma if it is to have the maximum opportunity for future successful operations, and that partnership on a commercial basis with the Government of the Union is clearly the best way of achieving this object. In this we are confident of the good-will of the Government and their sincere desire to co-operate with us in rebuilding and extending our industry in the future and in this respect the Government of the Union is contributing over a period of years considerable financial resources which the industry will urgently require.

We cannot for obvious reasons at the present time make any forecast as to when production from newly mined ore will be restarted. This depends on security conditions in Burma which in general are now much improved, and the restoration of adequate through railway traffic between Rangoon and Namtu, without which it is impossible to carry out mining operations.

Further, as and when conditions permit a resumption of mining operations, the problems confronting the Corporation in once again rebuilding its staff and labour force and the financial requirements of such a reconstruction would in our opinion be too heavy for the Corporation to bear alone. For all these reasons we consider that the scheme is essential to the future welfare of the industry and is in the best interests of you its shareholders and, no less, of the Union of Burma. I therefore conclude by urging you most strongly to give your consent to the measures recommended by your Board of Directors.

Yours faithfully,
JOHN R. GOVETT, Chairman.

BURMA CORPORATION, LIMITED
(Incorporated in the Union of Burma).

Registered Office: 44, Phayre Street, Rangoon.

9th November, 1951.

TO THE SHAREHOLDERS:

Dear Sir (or Madam),

Appended is a Notice convening an Extraordinary General Meeting of the Company to be held in Rangoon on the 14th December, 1951. The purpose of the Meeting is to consider and, if thought fit, pass the resolution set out in the Notice ratifying the execution of Heads of Agreement entered into between the President of the Union of Burma and the Company and authorising the Directors to enter into an Agreement for Sale whereby the undertaking of the Company in Burma will be sold to a new Company—Burma Corporation (1951) Limited—in exchange for 3,159,730 shares of Rs. 10 each in that Company credited as fully paid.

The Heads of Agreement, the principal clauses of which are summarised in the Appendix hereto also provide that the Government of the Union of Burma will subscribe by instalments in cash at par for 3,159,730 shares of Rs. 10 each in the capital of Burma Corporation (1951) Limited thus giving the Government an equal participation in that Company.

The figure of Rs. 3,15,97,300 for which the Company will sell its undertaking to Burma Corporation (1951) Limited is considered a fair one having regard under present day circumstances to the value and nature of the assets concerned, to the liabilities transferred, and to the market value of the shares of the Company. The equivalent sum in cash which the Government of the Union of Burma will contribute to Burma Corporation (1951) Limited is estimated, so far as it is possible so to do, to be sufficient to finance essential maintenance and rehabilitation of the property to an economic productive capacity.

As early as practicable after the allotment of the shares in Burma Corporation (1951) Limited has been made an Extraordinary General Meeting of your Company will be convened for the purpose of passing a resolution placing it in voluntary liquidation and authorising the liquidator to sell the shares in Burma Corporation (1951) Limited and the residual assets (other than the shares of its wholly-owned subsidiary Company, namely, Non Ferrous Metal Products Limited) of your Company in the United Kingdom to Burma Mines Limited—a company

(*continued on next page*)

which has recently been formed in the United Kingdom for this purpose and to act as sole Agent for and Adviser to Burma Corporation (1951) Limited—in exchange for shares of Burma Mines Limited credited as fully paid.

The voluntary liquidation of the Company and the distribution to its shareholders of its shares in Burma Mines Limited and Non Ferrous Metal Products Limited is the logical outcome of the reorganisation scheme proposed and in due course as stated above as and when the time becomes appropriate your consent thereto will be requested to carry this into effect.

On liquidation of Burma Corporation, Limited the shares of Burma Mines Limited and Non Ferrous Metal Products Limited will be distributed to shareholders of Burma Corporation, Limited on the basis of one share of each of these two subsidiary companies for each share of Burma Corporation, Limited, thus giving them a continuing interest through Burma Mines Limited in partnership with the Government of the Union of Burma in the operations in Burma.

Permission to deal in and quotation on The Stock Exchange, London, for the shares of Burma Mines Limited and of Non Ferrous Metal Products Limited will be applied for in due course.

A form of proxy is enclosed. Would you please be good enough to complete this and return it as early as possible to the London Secretary, Burma Corporation, Limited, 9, Basinghall Street, London, E.C.2. The completion of this form of proxy will not prevent you from attending and voting at the Meeting should you be able to do so. To be effective proxies must reach the London Secretary not later than 3rd December, 1951.

By Order of the Board,

R. D. ALTHORP, Secretary.

APPENDIX

1. A new company will be incorporated in Burma with the name "Burma Corporation (1951) Limited" (below called "Burma (1951)") with an authorised share capital of Rs.6,31,94,600 divided into 3,159,730 "A" shares and 3,159,730 "B" shares, all of Rs.10 each.

2. Burma Corporation, Limited will enter into a sale agreement with Burma (1951) in accordance with the draft attached as a Schedule to the Heads of Agreement and whereby the Company will sell to Burma (1951) as at the close of business on the 30th November, 1950, the undertaking and all its fixed and other assets in Burma in consideration of the allotment, credited as fully paid, of the 3,159,730 "B" shares in the capital of Burma (1951) and the undertaking by Burma (1951) to discharge all debts and liabilities arising out of the business of the company in Burma.

3. Contemporaneously with the entering into of the Sale Agreement mentioned above and the allotment of the "B" shares in Burma (1951) to Burma Corporation, Limited, the Government of the Union of Burma will enter into a Subscription Agreement with Burma (1951) to subscribe in cash at par for all of the 3,159,730 "A" shares in the capital of Burma (1951) and thereupon will apply for such "A" shares and pay in cash the sum of Rs. 5/3/- in respect of each share, representing a payment of 52 per cent. of the nominal amount of each such share. Under this Subscription Agreement the Government of the Union of Burma will undertake to pay the balance by 9 annual instalments each of 8 annas and a final instalment of 5 annas per share. The Government is to have the right at any time to pay any or all of such instalments in advance if it should desire so to do or if it is mutually agreed to be necessary in the interest of Burma (1951).

4. The Articles of Association of Burma (1951) will provide that:—

(a) Of the maximum number of Directors permitted, namely, six, three are to be termed "A" Directors representing the "A" shareholders and three "B" Directors representing the "B" shareholders and the holders of a majority of the "A" and "B" shares respectively are to have the right to appoint and remove the "A" and "B" Directors.

(b) The voting rights attached to the "A" and "B" shares are to be such that on a poll every member in person or by proxy and entitled to vote is to have one vote for every Rs. 10 in nominal amount of the shares held by him provided that until all the "B" shares shall have been acquired by the Government of the Union of Burma (in pursuance of the policy of nationalisation referred to in the Chairman's letter) the voting shall be by a block vote of the holders of the "A" shares and a block vote of the holders of the "B" shares, each of such block votes to represent 3,159,730 votes and be respectively cast in accordance with the majority voting by respective classes of the holders of the "A" shares and the holders of the "B" shares.

(c) At Board Meetings "A" Directors and "B" Directors shall each have one vote with the proviso that the total voting powers of the "A" and "B" Directors respectively shall be exercisable by those "A" and "B" Directors who are present at each Meeting of the Board. Until all the "A" shares shall be fully paid, the holders of the "B" shares are to have the right to appoint the Chairman. The Chairman is not to have a casting vote.

(d) For the purposes of sub-paragraphs (a) (b) and (c) above the term "holders of the 'B' shares" shall be deemed to mean the holders of those "B" shares which for the time being are not held by or on behalf of the Government of the Union of Burma.

(e) All dividends on "A" and "B" shares (which for this purpose rank pari passu) shall be apportioned and paid proportionately to the amounts paid up or credited as paid up on the shares during any portion or portions of the period in respect of which a dividend is paid and the Government of the Union of Burma shall, subject to the provision of any enactments or regulations for the time being in force concerning foreign exchange control, give or procure to be given all necessary facilities to enable such dividends from time to time to be remitted in United Kingdom sterling to shareholders not resident in the Union of Burma.

5. Contemporaneously with the entering into of the Sale Agreement and the Subscription Agreement mentioned above, the Government of the Union of Burma will renew the Bawdwin Mining Lease in favour of the Company and on terms which have already been agreed between the Company and the Government. A copy of such lease, which will be assigned to Burma (1951), is scheduled to the Heads of Agreement.

6. Burma Mines Limited will be appointed sole Agent of and Adviser to Burma (1951) for a minimum period of 6 years.

7. The Government of the Union of Burma will not transfer any "A" shares while they are partly paid, nor will it exercise its statutory power under the laws of Burma compulsorily to purchase any "B" shares in the capital of Burma (1951) until all the "A" shares have been paid in full. As soon as circumstances permit, it is intended that quotation will be sought for the "B" shares of Burma (1951) on The Stock Exchange, London, and/or the Calcutta Stock Exchange, and that for this purpose the necessary arrangements will be made to make available to those markets such number of shares as are necessary. The Government of the Union of Burma undertakes that should it at any time after the "A" shares above mentioned have been paid in full, desire, in the exercise of the statutory powers conferred upon it by the law of the Union of Burma, to purchase compulsorily any of the "B" shares, it will pay in sterling in respect of each such share so purchased a sum equal to the average price thereof (ascertained as laid down in the Heads of Agreement) on The Stock Exchange, London, or failing this on the Calcutta Stock Exchange, during the twelve months immediately preceding the date that notice to purchase is given or, in the absence of any quotation, at par.

8. It is intended at a later date, subject to the passing by the Shareholders of the necessary special resolution, to place Burma Corporation, Limited, in voluntary liquidation and

(i) to transfer its then assets and undertaking to Burma Mines Limited (the Company mentioned in 6 above) in consideration of the allotment and issue credited as fully paid up of shares in that Company;

(ii) to distribute such shares amongst the shareholders of the Company.

In this the Government will so far as it may be required reasonably so to do give or procure to be given all the consents and assistance necessary to enable the contemplated voluntary winding up of the Company and the distribution of its then assets amongst its shareholders.

THE BURMA COMPANIES ACT.
COMPANY LIMITED BY SHARES
BURMA CORPORATION, LIMITED
(Incorporated in the Union of Burma).

NOTICE IS HEREBY GIVEN that an Extraordinary General MEETING of Burma Corporation, Limited, will be HELD at the Registered Office of the Company, 44, PHAYRE STREET, RANGOON, on FRIDAY, the FOURTEENTH day of DECEMBER, 1951, at 11 o'clock in the forenoon for the purpose of considering and, if thought fit, passing the subjoined Resolution as an **Ordinary Resolution:**—

"That the execution by Richard Charles Leach on behalf of the Corporation of the Heads of Agreement dated October 13, 1951, and made between the President of the Union of Burma and the Corporation in the terms of the copy submitted to this meeting be and the same is hereby ratified and that in implementation of the terms of the said Heads of Agreement the Board of Directors be and it is hereby authorised and directed to enter into a Sale Agreement with Burma Corporation (1951) Limited in the terms of the draft Agreement attached to the said Heads of Agreement and expressed to be made between this Corporation of the one part and Burma Corporation (1951) Limited of the other part being an Agreement for the sale by this Corporation of all its fixed and other assets and undertaking in the Union of Burma and to carry the same into effect and the Board of Directors be and it is hereby further authorised and directed to enter into and carry into effect such other agreements and to execute and do such other acts and things as may be necessary for the implementation of the terms of the said Heads of Agreement." Dated this Ninth day of November, 1951.

By Order of the Board,

R. D. ALTHORP, Secretary.

Registered Office: 44, Phayre Street, Rangoon.

NOTE—A copy of the Heads of Agreement, referred to in the above-mentioned Resolution, may be inspected during office hours at the Registered Office of the Company, 44, Phayre Street, Rangoon, or at the Office of the London Registrars, Central Registration Limited, 9, Basinghall Street, London, E.C.2, or at the Office of Orr, Dignam & Co., 29, Netaji Subhas Road, Calcutta, 1, or at the Office of Little & Co., Central Bank Building, Bombay, 1. Particulars of the principal clauses of such Agreement are contained in the accompanying letter from the Secretary of the Company.

THE CEMENTATION COMPANY

MR. H. CLAYTON'S REVIEW

The following is an extract from the Chairman's statement which has been circulated with the annual report and accounts for the year ended March 31, 1951:

The accounts to March 31, 1951, show a net trading profit of £424,041, once again showing an improvement on the previous year, and the profit is the largest in the history of the company. Increased taxation has caused the net profits to be somewhat reduced to the figure of £204,725.

The approximate value of uncompleted work on contracts on which the company (excluding subsidiaries) was engaged at March 31, 1951, was £8,000,000, as compared with £5,000,000 at the end of the previous year.

We have thought it expedient to promote our Muffelite department into a company called "Cementation (Muffelite) Ltd," which carries out all the work formerly undertaken by that department, with particular emphasis on the design and construction of test houses for aero engines.

PUBLIC WORKS

With regard to our large public works contracts, the Clunie Tunnel has now been completed. The Loch Erne scheme in Eire is substantially finished, and the Bowland Forest tunnel for the Manchester Corporation is proceeding according to schedule. We have recently obtained and now commenced a contract from the North of Scotland Hydro-Electric Board, the Lawers project, for the construction of a mass concrete dam about 150 ft. high, with 11 miles of mostly unlined tunnel, several miles of collecting aqueducts, pipeline foundations and power station.

Those of you interested in your company since its early days know that this was founded on the application of the Francois cementation process to shaft shinking in water-bearing measures. It was but a short step from that to dry shaft sinking and to development work in mines, and to the application of cementation to all the various problems created underground by the presence of water. There has never been a period, however short, in 32 years at home or abroad that we have not been engaged on mining with cementation. Over that period we have acquired a vast amount of plant, a trained staff, a good following of men and, above all, a great, wide and varied experience that entitles us to be called specialists, and I can tell you, not boastingly but factually, that throughout the world we are pre-eminent in this class of work, which as I forecast last year has now assumed its proper proportions.

The boring and drilling work has maintained its turnover satisfactorily, including the prospecting work carried out for the directorate of Opencast Coal Production.

Our activities in India and Pakistan have been further expanded and we anticipate in due course good results from the large amount of work on offer.

The managing director paid a long visit to South Africa this year, and he is satisfied that both our short and long-term prospects there are abundant and good.

The Cementation Company (Canada) Ltd., has already forecasted its future performances by carrying out successfully some interesting cementation contracts, and this year has increased its turnover and has had a good prospect of being awarded further valuable specialised contracts.

Following the purchase of the Geo-Technical Development Co., Ltd., in Canada, we have expanded our activities in this sphere by the formation early this year of The Geophysical Prospecting Co., Ltd., for the main purpose of carrying out exploratory work of all kinds in the oil fields of Alberta. I am glad to be able to say that, as we anticipated, the results of the necessary limited operations so far carried out have been satisfactory and give us confidence in the future.

As I have often stated, the policy of the Board during the recent years of expansion has been not to seek permanent finance until the need was fully justified and until your Board was confident of the future profitable employment of fresh capital. After serious consideration we now feel that the capital of the company should be strengthened by the addition of a substantial amount of fresh money, and we have therefore made an offer to the Ordinary Stockholders. It has also been arranged that the amount of our unsecured loan, at present £500,000, will be increased to £600,000 on revised terms. The Board is of the opinion that the addition of these new funds, £668,750 (less expenses of the issue and loan), should be sufficient to finance the continuing expansion of the group for some time.

We now propose that the dividend should be at the rate of 15 per cent. and, subject to any matters outside our control, we hope to maintain this rate of dividend on the Ordinary capital, including the addition referred to in the preceding paragraph.

RENONG TIN DREDGING

RECORD PROFIT

SIR JOHN HAY ON FUTURE OPERATIONS

The Thirty-Eighth Annual General Meeting of The Renong Tin Dredging Co., Ltd., will be held on December 3; at 52-54, Gracechurch Street, London, E.C.3.

The following is the statement of the chairman, **Sir John Hay,** which has been circulated to stockholders:

DREDGING OPERATIONS

The output of tin ore for the year ended June 30, 1951, amounted to 748 tons, against 908 tons for the previous year. The fall was due to No. 2 Dredge having been out of commission for the first six months for the purpose of carrying out major repairs. Results since achieved give evidence that the changes made have been highly beneficial. Yardage since treated has exceeded expectations and recoveries much improved. In fact, returns are slightly in excess of average borehole values. The mine superintendent, engineers and the men who assisted deserve our particular thanks for a job well done under difficult conditions. The Rasa District, in which this dredge operates, is a notorious centre of disturbance in Malaya's guerrilla war and unpleasant and dangerous incidents are of almost daily occurrence.

Gombak dredge performed steadily and satisfactorily throughout the year. No serious stoppages occurred, but working time was limited by power restriction which from October, 1950, was increased to six hours daily, due to the breakdown of a generating set at the power station from which electricity is drawn. Recoveries from Gombak were disappointing. The ground encountered was shallower in depth than was expected and much more high bedrock was met than previously, necessitating frequent blasting of limestone pinnacles. Stockholders who have followed the fortunes of Renong in past years are aware that Gombak throughout its life has proved a very difficult dredging proposition, and it may be doubted whether an area presenting greater hazards has been successfully dredged in the whole of Malaya. The fact that no serious breakdowns have occurred is a tribute to the efficiency and skill of the superintendent, his staffs and the crew. It will be noted from the consulting engineers' report which was circulated with the annual report that the current financial year will see completion of the mining of virgin land at Gombak, although, as a result of boring tests being carried out, it is hoped to re-treat profitably parts of the area where the irregular nature of the bedrock prevented the dredge from making normal recoveries. By redredging crosswise to the original cut, part at least of the values left behind may be recovered, but only actual trial will prove whether this is feasible.

The question of our future policy in connection with Gombak Dredge now that the property is nearing exhaustion is dealt with in a later paragraph.

THE YEAR'S RESULTS

Turning now to the financial side of the year's operations, profit before tax amounted to the record figure of £277,519 against £127,682 for the previous year. The greatly increased profit secured, despite a lower output, is due to the unprecedented price level reached for tin during the year, but the British and Malayan Governments, as is usual in these days, are the chief beneficiaries. In addition to duty on tin ore paid to the Malayan Government amounting to £88,394, provision for taxation in the two countries requires £156,186.

As the Gombak property is nearing exhaustion, we have considered it wise to write off the balance of its cost which stood in last year's balance-sheet at £16,361. With the normal depletion allocation for the Rasa property added, the total depletion allowance charged against profit totals £22,824. Gombak Dredge has been regularly depreciated in past years and stands in our balance-sheet at £54,484. As the dredge is still a comparatively new vessel, we see no necessity for writing this figure down further, but it must be recognised that replacement values far exceed the total amounts written off our dredges and we have, therefore, considered it prudent to take the occasion of high profits to establish a reserve for equipment with an initial transfer of £50,000.

After making all these provisions and allowances, the balance of profit available enables us to recommend a final dividend on Ordinary stock of 20 per cent., raising the distribution for the year to 35 per cent., against 25 per cent. for 1949-50. This leaves £33,122 to be carried forward, against £25,941 brought in.

FUTURE OPERATIONS

I now turn to the question of future operations. I informed you in my address last year that it was necessary to intensify the search for new areas and £20,000 was set aside for pros-

pecting operations. At that time, we were engaged in boring an area which showed promise of proving a suitable proposition for Gombak Dredge, but, as you will have read in our consulting engineers' report, after one month's work carried out under dangerous conditions terrorists removed or destroyed the larger part of the boring equipment, so that the programme was forcibly brought to a premature halt. Strong representations were naturally made to the authorities for protection to enable us to recommence, but following an ambush in the district which resulted in heavy loss of police personnel, we were officially informed that protection could not be provided and consequently prospecting in the area could not proceed. Mining prospecting in Malaya is almost at a standstill, owing to the state of lawlessness and disorder which prevails. We are, however, engaged in negotiations at present in respect of two other propositions, but in neither case are they likely to reach a conclusion for some months to come. The Gombak Dredge is our most up-to-date and most powerful producing unit, but until we know the outcome of the negotiations, of which I have just made mention, we cannot determine on what ground we shall place it when the present property upon which it is working is exhausted, which will be in a matter of a few months. The Kuala Kubu Western area will keep No. 2 Dredge working for another four to five years and we still have in reserve the Kuala Kubu Eastern area. If as a result of the negotiations, we acquire another property, then we must determine whether Gombak Dredge is to operate there or at Kuala Kubu East, but to whatever area it may be allotted time and considerable expense will be involved in dismantling, re-equipping and transporting the dredge to a new site. This will put the dredge out of action for 12 to 18 months and during that time only No. 2 Dredge will be in operation. It is mainly for that reason that we have perhaps been somewhat conservative in this year's distribution to stockholders, having in mind the maintenance of dividends at a reasonable level during the dredge reconstruction period.

I am pleased to inform you that progress is at last being made in dealing with our compensation claim for war damage. Assessment by the Commission is now under consideration and our agents advise that an award may shortly be notified.

To our managers and staffs on the mines we express our thanks for their services; especially do we remember those who serve on the Rasa property where conditions are not free from danger. To our Consultants, Messrs. Vallentine and Dunne and our agents, Messrs. Guthrie & Co., Ltd., we should also like to convey our appreciation for their sound advice and efficient administration.

DIVIDENDS

Amari Mines 6%
Anglo-Ecuadorian Oilfields 10%
Anglo-Iranian Oil 5% *i* (Nov. 23)
Beralt Tin and Wolfram 60% final; 30% *i*
Bulolo Gold Dredging 50c. *i* (Nov. 30)
Cementation Co. 15%
Chenderiang Tin Dredging 5%
Cons. African Selection Trust 75%
Cons. Goldfields of South Africa 15%
Cons. Zinc Corporation Cum. Pref. 2¼% Ord. *i* 1s. (Jan. 1)
Frontino Gold 2½% *i*
Harrisons & Crosfield 22½%
H. E. Proprietary 5% *i* (Nov. 29)
International Nickel Co. of Canada 130c. (Dec. 20)
Ipoh Tin Dredging 1s. 9d.
Jantar (Nigeria) 35%
Kamunting Tin 15%
Kramat Pulai 6d. (Dec. 19)
Lake George Mining Corporation 2s.
Lake View and Star 1s. 6d.
Malayan Tin Dredging 6d. *i* (Nov. 30)
Messina (Transvaal) Development 160% (Dec. 19)
Mining Corporation of Canada 70c. *i*
Mt. Lyell Mining & Railway 6½%
New Broken Hill Consolidated 20% (Jan. 1)
New Broken Hill Consolidated 1s. *i* (Jan. 1)
North Kalgurli (1912) 50% (Dec. 14)
Pahang Consolidated 45%
Phoenix Mining and Finance 5%
Placer Development 25c. *i*
Rawang Concessions 25% *i* (Nov. 28)
Renong Tin Dredging 20%
Royal Bank of Canada 20c. (Dec. 15)
Selayang Tin Dredging 30% *i* (Nov. 30)
South West Africa Company 37½%
Southern Malayan Tin 1s. 9d. *i* (Nov. 28)
Streamline Filters 5% *i*
Temoh Tin Dredging 2s. 6d. (Dec. 21)

i interim * Tax free

THE MAWCHI MINES, LTD.

The Annual General Meeting of The Mawchi Mines Ltd. was held on November 14 in London, **Mr. George P. Joseph** (Chairman) presiding.

The following are extracts from his circulated Statement:

Mr. Crouch, our Mine Accountant, was granted permission by the Burma Government to return to Mawchi last May and since his return he has been able to let us have the information required to complete the Company's Accounts for the two years to March 31, 1951. The net losses amounted to £62,736 for 1949/50 and £45,663 for 1950/51. Out of the £150,000 five per cent Convertible Notes which were issued in October, 1949, £86,020 had been converted up to the end of March last, leaving £63,980 outstanding. Since that date a further £2,665 have been converted. There has been no improvement during the past twelve months and the mine area, together with our transport routes to Rangoon, still remains under the control of Karen forces in armed opposition to the Government of the Union of Burma. The continuance of this state of affairs—which has now lasted for three years—has inevitably increased our difficulties. Shortages of cash and essential stores have necessitated reducing our labour force to about 150 men and this in turn has meant a reduction in the work carried out in connection with the care and maintenance of the property.

The continued presence at Mawchi of a small European staff has been the sole means of maintaining the Company's authority over the property, and we shall continue to do everything possible to protect the Company's interests and to hasten the day when we are able to restart normal operations.

Addressing the meeting the Chairman, referring to the requisitioning of concentrate stocks at the mine, said: The recovery of stolen ore is invariably a difficult business but you can rest assured that everything possible is being done to protect the Company's interests.

The Burma Constitution of 1947 provided for certain measures of self-government to the Karens and other minority races and a lot of what has recently been reported regarding self-government for the Karens is not an entirely new development. The Government has now passed a Constitution Amendment Act giving the Karens additional measures of self-government, but their response to this advance is not yet known. The Burma Government, by passing this legislation, has taken a further step in an endeavour to reach a settlement with the Karens and we sincerely hope that their efforts will be successful, so that peaceful conditions can be restored at an early date and enable us to resume productive operations.

The report was adopted.

CONSOLIDATED MURCHISON (TRANSVAAL) GOLDFIELDS AND DEVELOPMENT, COMPANY LIMITED.

(Incorporated in the Union of South Africa)

Directors' Report for the Quarter ended September 30, 1951.

The following is the report on the work during the quarter ended September 30, 1951:—

Tons Crushed	**43,329**
Estimated Profit from Antimony and Gold...	**£803,174**
Estimated Taxation	**£214,000**

In addition, Revenue of **£1,918** was received during the quarter in respect of increased revenue from the sales of gold at higher than standard prices.

The Capital Expenditure during the period amounted to **£30,541.**

During the quarter the Development footage accomplished amounted to **2,146** feet, of which **1,083** feet were in the ore body. The sampling of **880** feet in the ore body gave the following results:—

Payable on account of the combined gold and antimony content **860** feet; Unpayable, **20** feet.

In determining the payable footage the prices of Gold and Antimony as at September 30, 1951, have been used.

The development figures mentioned above are the actual result of the sampling of development work in the ore body, no allowance has been made for modification which may be necessary when computing the ore reserves.

By Order of the Board,
ANGLO-TRANSVAAL CONSOLIDATED INVESTMENT COMPANY, LIMITED.
Secretaries,
Johannesburg.

Topical News in Brief

Hungarian Mining Machinery Plant.—A new mining machinery plant which is nearing completion in Budapest, is to produce mainly types of mining machinery and transport installations hitherto not made in Hungary.

South African Locomotive Order for West Germany.—The South African Railway Administration has recently placed several orders, including one for 50 locomotives of 150 tons weight each, with the Henschel locomotive firm, Kassel, U.S. Zone of Germany. Other orders from South Africa are being negotiated.

Steatite Discovery in Yugoslavia.—An extensive deposit of steatite (soapstone) has been discovered in Bosnia-Hercegovina and large-scale exploitation will begin in the near future, according to reports reaching Vienna. The mineral is used for the manufacture of laboratory wares and components for radio and X-ray apparatus.

Helium Plant for India.—The Secretary to the Indian Ministry of Scientific Research and Natural Resources stated on his return from America that that government had offered India $55,000 to set up a liquid helium plant. A high-voltage laboratory has also just been completed in Bangalore at a cost of £250,000.

American Expert to Advise on Madras Lignite.—An American expert, Mr. Eyrichis, is going to Madras to advise the Government on the economic exploitation of lignite deposits in the South Arcot District. The deposits are located at Cuddalore near Neyveli and cover an area of over 100 square miles. The possibilities of manufacturing by-products will also be examined.

India's Coal Machinery.—According to the Monthly Coal Bulletin for February, issued by the Chief Inspector of Mines in India, there were 370 coal cutting machines in use in 118 coal mines during February, of which 360 were the Chain type, one of Bar type and nine Percussive. During the same month, there were nine mechanical loaders in operation which loaded 17,213 tons of coal and also there were 19 conveyors working. Total length of the conveyors was 9,188 ft. and 54,581 tons of coal were conveyed. Four chain type machines and two mechanical loaders were not in operation during February.

India's Mineral Deposits to be Explored.—Large-scale geophysical explorations on strategic minerals like chromium, sulphur, and manganese will be made in India during the next six months, according to Dr. M. S. Krishnan, Director of the Geological Survey of India. One prospecting party will work in Shahabad (Bihar) for sulphur. Besides the field survey, a team of mining engineers will prospect for ferrous metal deposits. A five-year programme, drawn up by the Geological Survey of India, and involving an expenditure of more than Rs.10,000,000 will, according to Dr. Krishnan, be put into commission early next year.

Yugoslavia to get U.S. Metal Industry Equipment.—The Government of Yugoslavia has ordered the complete equipment for two iron ore sintering plants that will boost the capacity of the country's two largest steel mills by 25 per cent. In addition to supplying the electrical equipment, the Westinghouse Electric International Company will also co-ordinate the purchase of mechanical equipment from about a dozen American suppliers. Additional apparatus for the units will be made in Yugoslavia.

The new sintering plants are expected to increase the capacity of the steel mills at Sisak (Croatia), and at Zenica (Bosnia), because they will permit processing larger quantities of iron ore in each blast furnace charge. The new apparatus will add upwards of 75,000 tons of steel to annual capacity of Yugoslavia's blast furnaces, believed at present to be between 400,000 and 500,000 tons.

Search for Rare Rhodesian Metals in S. Rhodesia.—A new prospecting boom has started in Southern Rhodesia, particularly the Salisbury district. The number of prospecting licences issued in the area has jumped from an average of 20 or 30 a month last year to 125 in August. The total number for the Colony during July, 1951 was 1,841, against 1,299 in July last year. Some of the new prospectors are searching for rare minerals; gold claims, on the other hand, are fewer. Minerals with a strategic value are being sought on an unprecedented scale. Beryllium, used in making atomic weapons, is in particular demand. Prospectors are also looking for kyanite, lithium, tantalum, titanium, kaolin, silica, corundum and olivine. Taking out a prospecting licence is an easy enough matter; it costs only £1 and the only qualification the prospector needs is to be a permanent resident of Southern Rhodesia and over the age of 21. All Government land, native reserves and most private land, unless there is a reservation of minerals in favour of the land-owner, is open to prospecting.

Big Waterfall Found in F.M.S.—Jungle patrol in Malaya is reported to have been responsible for the discovery, in Pahang, of a waterfall 600 ft. high and 30 ft. wide believed to be the largest in the Malayan Confederation.

More Equipment for Australia's Coal Mines.—The Australian National Development Minister, Senator Spooner, announced that the Government had authorized the Joint Coal Board to sell £A.9,000,000 worth of equipment to private colliery owners. Senator Spooner said it had been the custom for the Board to buy equipment and sell or hire it to owners because of difficulties encountered with private imports from overseas. The Government was anxious to speed coal mine development.

New Swedish Mining Plans.—Total estimated costs for putting into operation the State-owned Boliden Ore Company's new mine at Rudtjebaeck, North Sweden, will amount to 18,200,000 crowns, the Swedish Commercial Collegium reports. The proposed yearly output is 200,000 tons of ore and the costs will be divided over five 12-month periods. The company hopes to start operations at half-capacity, in January, 1955, and full production in July, 1957. An investment of 10,000,000 crowns will be assigned for the beginning of the construction work in the budget year 1952-1953. The international shortage of sulphur and iron-pyrites is likely to affect Swedish supplies, states the Collegium, and it is therefore essential to start work on the Rudtjebaeck mine to increase output as soon as possible.

Indian Aluminium Industry Expansion Plans.—Plans for the expansion of the Indian aluminium industry are now being investigated by the two main aluminium factories, which together produce 3,678 tons, while India's total requirements are 15,000 tons a year, writes our Indian Correspondent. Mr. H. K. Mahatab, Minister for Commerce and Industry, said that one of the firms had applied for financial assistance to the Government to expand its productive capacity, and that the other firm was making a survey to start another factory. To some extent, the two factories were not working at their installed capacity because of the want of adequate power. The Minister added that no subsidy was needed because Indian prices compared very favourably with those of imported materials.

Mining in Honduras.—In a recent report on economic conditions in Honduras in the Overseas Economic Survey Series, published by the Board of Trade, the mining industry of the Republic is briefly referred to. For Honduras it is claimed that the mineral resources of the country include gold, silver, lead, antimony, iron, copper, tin, zinc, coal, cinnabar and pitchblende. The only minerals now being worked are gold and silver, and on a small scale, lead and antimony. Active mines are the New York and Honduras Rosario Mining Co., the Agua Fria Mining Company, and the New Idria Honduras Mining Co. which are United States undertakings, and the Minas Antiguas S.A., which is Canadian. Of these, only the first-named operates on a large scale. Exports of gold, silver and coin in 1949 were valued at Lps.9,288,000. (Two Lempiras being worth $U.S.1.)

West German Iron and Steel Industry Investments.—The West German iron and steel industry needs investments of at least 2,500 million marks during the next two to three years to compete with the British, American and French industries and to relieve West Germany's steel shortage, according to Dr. W. Salewski, manager of the Association of the West German Iron and Steel Industry. In an article in the German periodical, *Iron and Steel*, he said this sum constituted only the most urgent investments and alleged that the iron and steel industry had been neglected in the distribution of investment funds of Government sources, as compared with the sums allotted to other industries.

While the electric power industry was to get 924,000,000 marks out of E.C.A. counterpart funds, only 550,000,000 marks were to be allocated to the coal industry and only 167,000,000 marks to the iron and steel industry.

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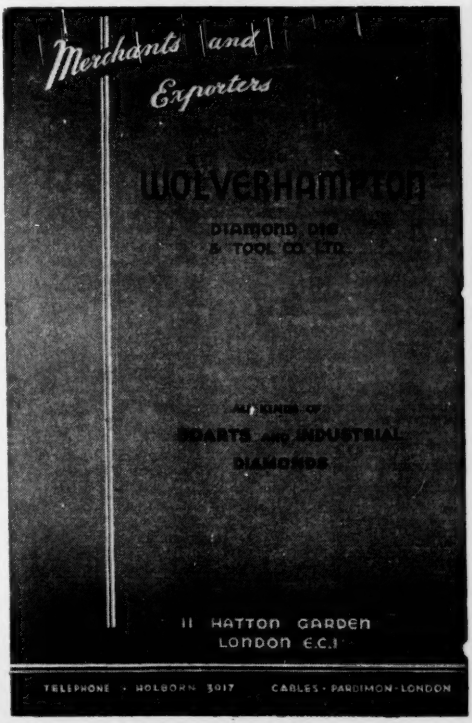

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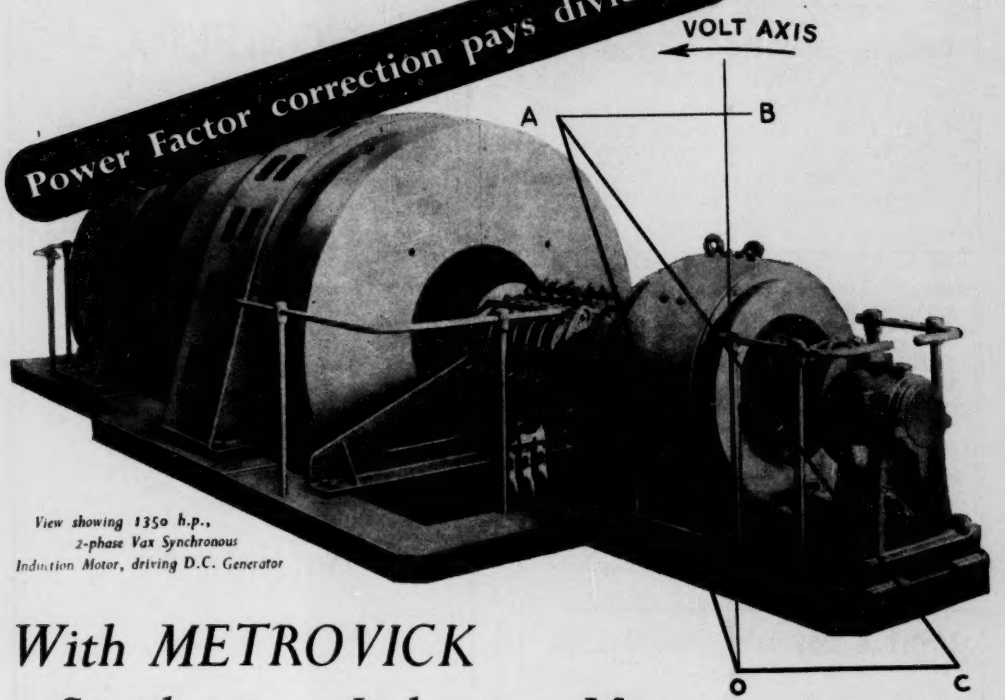

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